

REPORT

DESIGN BRIEF 979 WELLINGTON STREET

Project: 126031-7.03.04



Prepared for ML Wellington Realty Investments Inc.
by IBI Group
February 24, 2023

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1 INTRODUCTION

1.1 Scope

The purpose of this report is to outline the required municipal services, including water supply, stormwater management and wastewater disposal, needed to support the redevelopment of the subject property. The property is approximately 0.29 hectares in area and is located at the following current municipal addresses, 979 to 961 Wellington Street and 26 to 40 Armstrong Street. The site is bound by Hilda Street to the north-east, Wellington St. W to the south-east, Garland Street to the south-west and Armstrong Street to the north-east. Please refer to **Figure 1 – Location Plan** for more details.

This Design Brief, which also includes the Stormwater Management Plan, Watermain Analysis and Erosion and Sedimentation Control Plans, is being completed in support of the current Site Plan Application.

1.2 Subject Site

ML Wellington Realty Investments Inc. proposes to construct a 12-storey mixed-use building with 252 residential units along with 8,042 square feet (747 square metres) of ground floor retail space fronting along Wellington Street West. The proposed development also includes 3 levels of underground parking. Vehicular access to the site will be from Hilda Street. Please refer to **Figure 2 – Site Plan** for more information.

The site currently consists of a mix of existing low rise commercial and residential structures. All existing structures within the subject property will be demolished to facilitate the proposed development.

1.3 Pre-consultation

A pre-consultation meeting was held with the City of Ottawa staff and members of the design team on July 1, 2020. IBI also had discussions with a City of Ottawa Development Approvals Project Manager to discuss and review site servicing constraints. Correspondence from City staff has been provided in **Appendix A**.

The city advised that there was no water or wastewater servicing constraints from the subject lands. A standard infill development stormwater management target is being applied for this development.

2 WATER DISTRIBUTION

2.1 Existing Conditions

The subject site is located within Pressure Zone 1W of the City of Ottawa's water distribution system. The following watermains are located adjacent to the site;

- 203 mm watermain in Armstrong St
- 152 mm watermain in Garland St.
- 305 mm watermain in Wellington St.

2.2 Design Criteria

2.2.1 Water Demands

Water demands are based on Table 4.2 of the Ottawa Design Guidelines – Water Distribution. As previously noted, the development consists of a 12-storey apartment building with 252 apartments. The population for apartment buildings is assumed at 1.8 persons per unit as found in Table 4.1 of the Design Guidelines. A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

Average Day	1.49 l/s
Maximum Day	3.73 l/s
Peak Hour	8.19 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rates

A calculation using the Fire Underwriting Survey (FUS) method was conducted to determine the fire flow requirement for the site. The building is considered non-combustible construction and the building is fully sprinklered, refer to the letter and confirmation email in **Appendix B** for confirmation by architect and mechanical designers. Results of the FUS analysis provides a maximum fire flow rate of 8,000 l/min or 133.3 l/s is required which is used in the hydraulic analysis. A copy of the FUS calculation is included in **Appendix B**.

2.2.4 Boundary Conditions

A boundary condition was provided by the City of Ottawa for a double connection to the 152 mm diameter watermain on Garland Street and the 203 mm diameter watermain on Armstrong Street adjacent to the development. A copy of the boundary conditions is included in **Appendix B** and summarized as follows:

BOUNDARY CONDITIONS	
SCENARIO	HGL (m)
Maximum HGL	115.2m
Minimum HGL (Peak Hour)	107.7m
Max Day + Fire Flow	107.2m at Connection 1 (Garland) 108.2m at Connection 2 (Armstrong)

2.3 Proposed Water Plan

The minimum water pressure inside the building at the connection is determined by the difference between the water entry elevation of 60.5m and the minimum HGL condition, resulting in a pressure 463.0 kPa $[(107.7 \text{ m} - 60.5 \text{ m}) \times 9.81 \text{ m/s}^2]$ which exceeds the minimum requirement of 276 kPa per the guidelines. Because the pressure at the 12th floor under minimum HGL conditions is less than the minimum requirement of 276 kPa, a domestic water pump will be necessary for this building.

Maximum water pressure is determined by the difference between the water entry elevation of 60.5m and the maximum HGL condition resulting in a pressure of 536.6 kPa $[(115.2 \text{ m} - 60.5 \text{ m}) \times 9.81 \text{ m/s}^2]$, which is less than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is not required for this building.

The maximum day + fire flow analysis results in a residual pressure greater than 20 PSI therefore the water system is adequate to meet the firefighting needs. Additionally, 3 class AA existing hydrants are located less than 75 metres from the proposed site. This will provide a combined fire flow of 17,100 litres per minute (5,700 l/min x 3) which exceeds the required fire flow calculated in section 2.2.3.

In order to service the property one 152mm dia water services is proposed off Garland Street and one 152mm dia water service is proposed off Armstrong Street, with an existing valve box separating the services. Two 152mm dia water services separated by a valve provides operational redundancy for the 12-storey building. Refer to the Site Servicing Plan 126031-C-001 and drawing C-010, General Notes and Legends, both of which are located in **Appendix B** for the detailed design.

3 WASTEWATER

3.1 Existing Conditions

The following sanitary sewers are located adjacent to the site;

- 300 mm PVC sewer in Armstrong St draining NE
- 300 mm concrete sewer in Garland St. draining SE
- 300 mm PVC sewer in Wellington St draining NE

3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

- Commercial/Institutional flow 28,000 l/ha/d
- Residential flow 280 l/c/d
- Peaking factor 1.5 if ICI in contributing area >20%
1.0 if ICI in contributing area <20%
- Infiltration allowance 0.33 l/s/ha
- Velocities 0.60 m/s min. to 3.0 m/s max.

Given the above criteria, the total wastewater flow from the proposed development will be 5.13 l/s, the detailed sanitary sewer calculations and drawing C-400 Sanitary Drainage Area Plan are included in **Appendix C**.

3.3 Existing Sewer Capacity

The sanitary sewer to which a connection is proposed runs within the Wellington Street ROW running north east. As noted in the pre-consultation memo from The City of Ottawa there are no noted capacity constraints as it relates to the subject sewer.

3.4 Recommended Wastewater Plan

The Site Servicing Plan included in **Appendix B** illustrates the proposed layout of sanitary sewers to service the development. A 200mm dia sanitary service lateral is proposed to connect to the existing 300mm sanitary sewer in Wellington St. to service this site. There is not enough space between the building and property line for a monitoring manhole, therefore a sampling port to be located inside the building is proposed.

4 STORMWATER SYSTEM

4.1 Existing Conditions

The following storm sewers are located adjacent to the site;

- 300 mm PVC sewer in Armstrong St draining NE
- 300 mm concrete sewer in Garland St. draining SE
- 600 mm concrete sewer in Wellington St draining NE

4.2 Design Criteria

Criteria for the stormwater management was provided by the City of Ottawa and is as follows;

- Assume existing storm sewers designed to a 5-year level of service
- Site to be designed to limit the 100-year post-development flow to a maximum of the 2-year pre-development flow
- Pre-development flow to use a maximum C of 0.5 and a minimum TC of 10 min.

The stormwater system will be designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

- | | |
|---------------------------------|--------------------------|
| • Design Storm | 1:5 year return (Ottawa) |
| • Rational Method Sewer Sizing | |
| • Initial Time of Concentration | 10 minutes |
| • Runoff Coefficients | |
| - Landscaped Areas | C = 0.30 |
| - Asphalt/Concrete | C = 0.90 |
| - Roof | C = 0.90 |
| • Pipe Velocities | 0.80 m/s to 6.0 m/s |

4.3 Proposed Minor System

The proposed design for this site shows a 300mm storm sewer connection to the 600 mm concrete storm sewer within the Wellington Street ROW. That sewer was sized based on the outlet flow of 22.14 L/s, which is calculated in Section 4.5. The storm sewer design sheet, Grading Plan C-200, and Storm Drainage Area Plan C-500, can be found in **Appendix D**. There is not enough space between the building and property line for a monitoring manhole, therefore a sampling port to be located inside the building is proposed.

4.4 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through an inlet control device (ICD) at the outlet of the cistern.

Flows generated that are in excess of the site's allowable release rate will be stored within a cistern located within the underground parking areas of the building. The cistern is to be designed by the mechanical engineer, who has provided a cross-section for reference (see **Figure 3** in the Appendices). An overflow CB will allow for emergency overflow relief.

The detailed minor stormwater plan for the subject site is indicated on the Site Servicing Plan, drawing C-001 in **Appendix B**. The plan shows a "roof drain" located at the low point of the carriage way to capture discharge from the courtyard. A 150 mm diameter outlet pipe from the roof drain is proposed to be directed internally to the P1 parking level where the mechanical designer will complete the drainage pipe routing to the building cistern. The outlet from the cistern is proposed to be a 300 mm diameter service pipe at a 1.0% slope.

4.5 Release Rate

The allowable release rate for the 0.29 Ha site can be calculated as follows:

$$\begin{aligned} Q_{\text{allowable}} &= 2.78 \times C \times i_{5\text{yr}} \times A \quad \text{where:} \\ C &= 0.5 \text{ (pre-development C maximum)} \\ i_{5\text{yr}} &= \text{Intensity of 5-year storm event (mm/hr)} \\ &= 998.071 \times (T_c + 6.053)^{0.814} = 104.19 \text{ mm/hr; where } T_c = 10 \text{ minutes} \\ A &= \text{Area} = 0.29 \text{ Ha} \\ &= \mathbf{42.0 \text{ L/s}} \end{aligned}$$

The maximum allowable release rate from the site is established as:

$$= \mathbf{42.0 \text{ L/s}}$$

4.6 On-Site Detention

Based on the 100-year uncontrolled post-development flows, the City of Ottawa's requirements cannot be met by the proposed development unless on-site storage is provided. A cistern with an orifice is proposed to achieve these requirements.

As per drawing C-500, the Storm Drainage Area Plan in **Appendix D**, there will be 0.04 Ha of uncontrolled runoff (Catchment Area B). This uncontrolled flow can be quantified as follows,

$$\begin{aligned} Q_{\text{uncontrolled}} &= 2.78 \times C \times i_{100\text{yr}} \times A_{\text{uncontrolled}} \quad \text{where:} \\ C &= 1.00 \text{ (hard surface)} \\ i_{100\text{yr}} &= \text{Intensity of 100-year storm event (mm/hr)} \\ &= 1735.688 \times (T_c + 6.014)^{0.820} = 178.56 \text{ mm/hr; where } T_c = 10 \text{ minutes} \\ A &= \text{Area} = 0.04 \text{ Ha} \\ &= \mathbf{19.86 \text{ L/s}} \end{aligned}$$

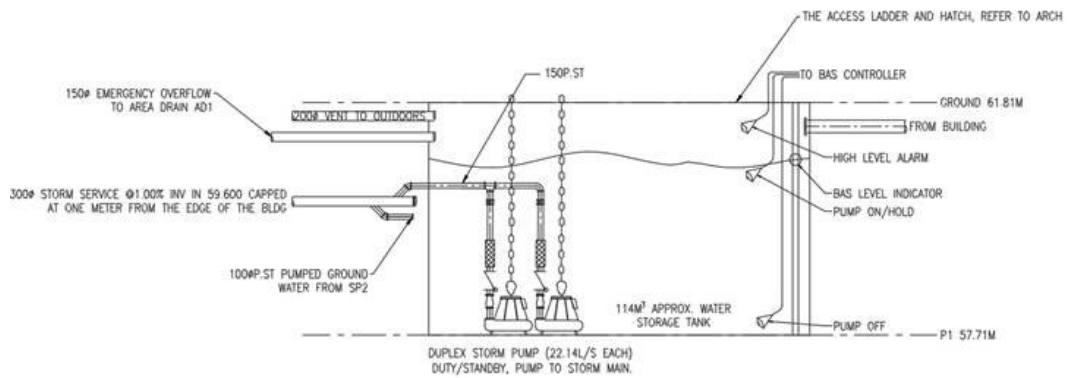
The uncontrolled release rate from the site is therefore:

= 19.86 L/s

Runoff from the remainder of the subject property will be collected and directed to the building's cistern. Since the maximum allowable release rate is 42.0 L/s, and 19.86 L/s is uncontrolled, the release rate of the cistern is $42.0 \text{ L/s} - 19.86 \text{ L/s} = 22.14 \text{ L/s}$.

To meet the allowable release rate for the redeveloped site, the required cistern volume for the 100-year storm event was determined to be 75.21 m^3 . Detailed calculations are presented in **Appendix D**. The cistern will be equipped with duplex storm pumps and will be set to pump at a rate of 22.14 L/s. The attenuated flow will be discharged directly into the existing storm sewer system on Wellington Street W via a 300 mm diameter service lateral pipe. An overflow CB will allow for emergency overflow relief.

The following cross-section has been provided by the mechanical engineer for illustrative purposes:



The final details of the cistern will be confirmed by the building's mechanical designer.

5 SEDIMENT AND EROSION CONTROL PLAN

During construction, existing stream and storm water conveyance systems can be exposed to significant sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings may be used such as;

- Filter socks will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use;
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.

During construction of the services, any trench dewatering using pumps will be fitted with a “filter sock.” Thus, any pumped groundwater will be filtered prior to release to the existing storm sewers. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed these structures will be protected with a sediment capture filter sock to prevent sediment from entering the minor storm sewer system. These will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

The detailed Sediment and Erosion Control Plan C-900 can be found in **Appendix E**.

6 CONCLUSIONS

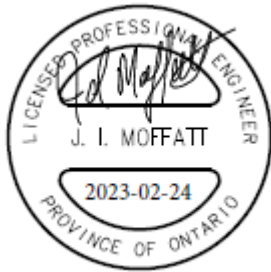
Municipal water, wastewater and stormwater systems required to accommodate the proposed development are available to service the proposed development. Prior to construction, existing sewers are to be CCTV inspected to assess sewer condition.

This report has demonstrated sanitary and storm flows from and water supply to the subject site can be accommodated by the existing infrastructure. Also, the proposed servicing criteria has been established in accordance with MECP and City of Ottawa current level of service requirements.

The use of lot level controls, conveyance controls and end of pipe controls outlined in the report will result in effective treatment of surface stormwater runoff from the site. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on the adjacent environment.

Based on the information provided herein, the development can be serviced to meet City of Ottawa requirements.

Report prepared by:



Jim Moffatt, P. Eng.
Associate



S. E. Labadie, P. Eng

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Project Title

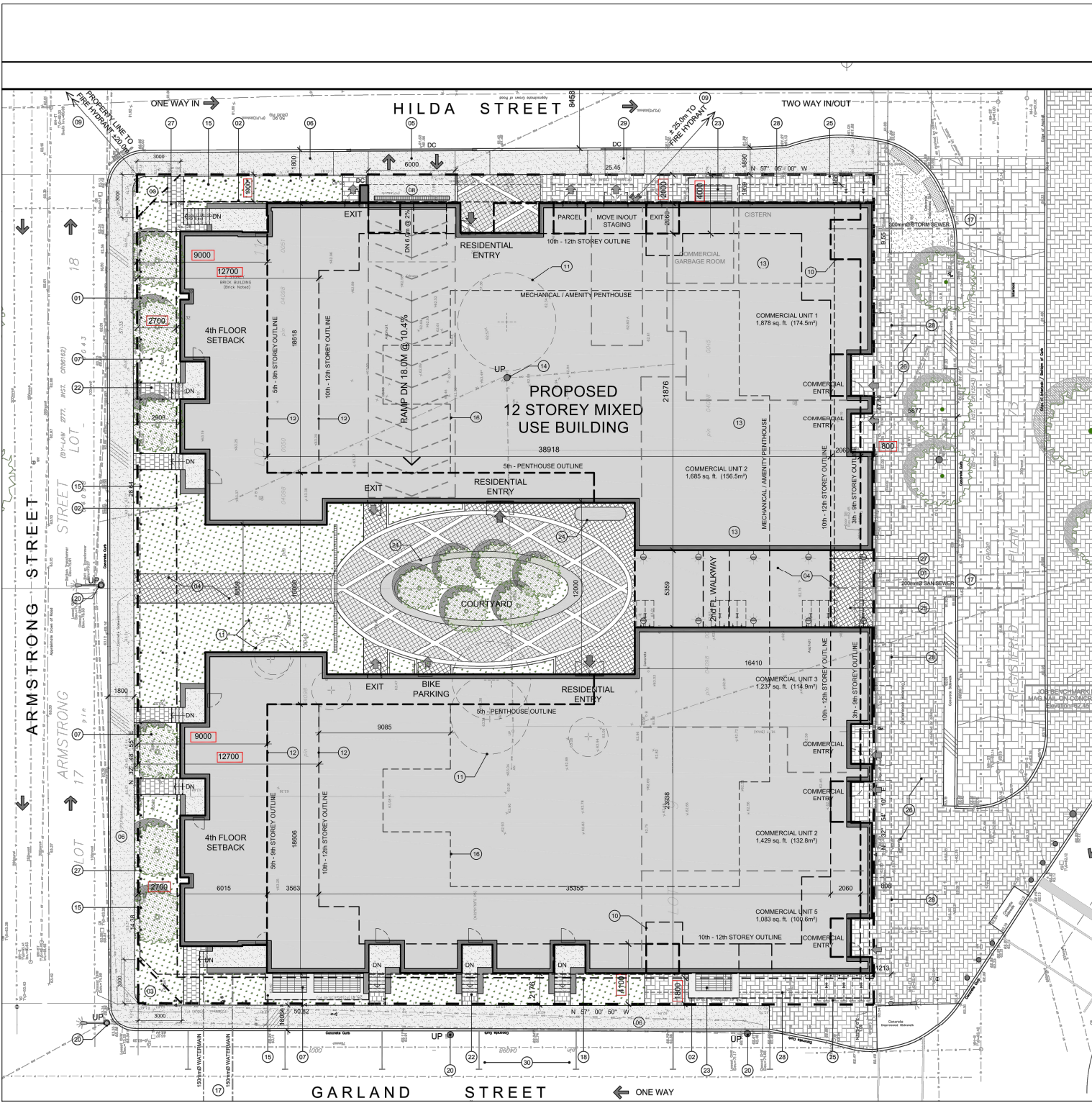
979 WELLINGTON STREET

Drawing Title

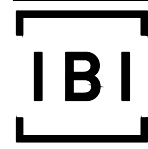
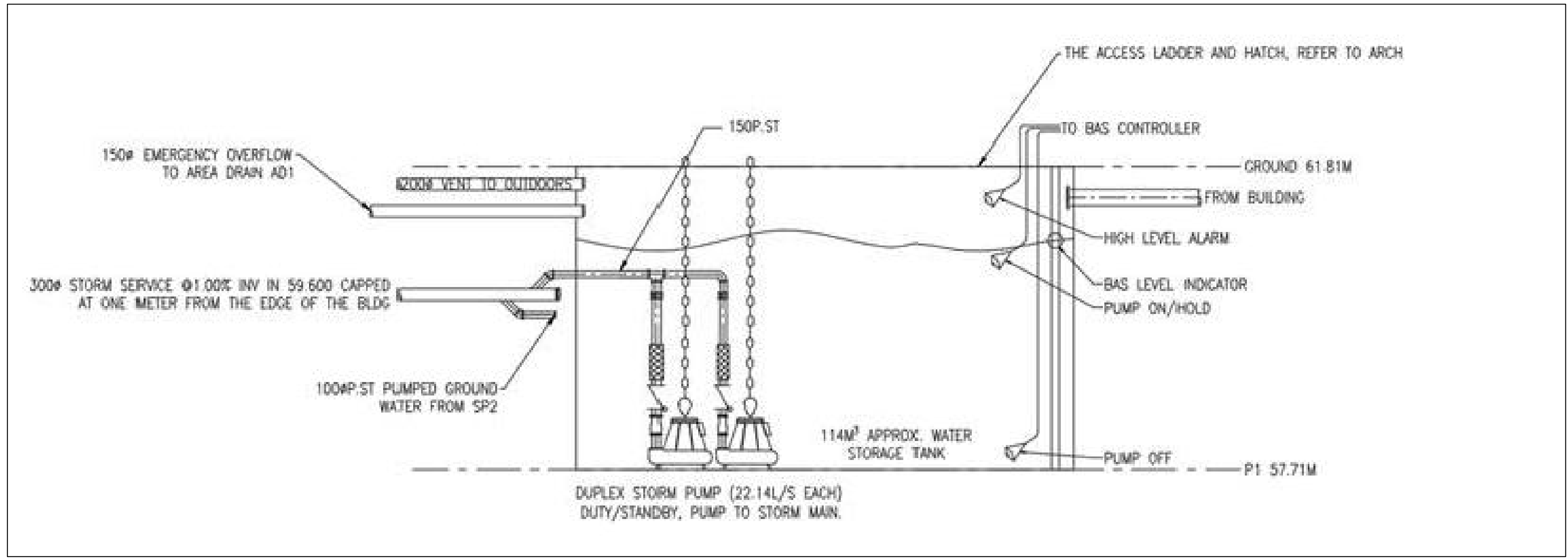
SITE LOCATION

Sheet No.

FIGURE 1



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Scale
N.T.S.

Project Title
979 WELLINGTON STREET

Drawing Title
CISTERN CROSS SECTION AS PROVIDED BY GOODKEY WEEDMARK & ASSOCIATES LTD. FOR REFERENCE

Sheet No.
FIGURE 3

APPENDIX A

- Pre-consultation Meeting Notes

Site Plan Pre- Application Consultation Notes

Date: June 30, 2020

Site Location: 973 - 979 Wellington, 40 Armstrong (PC2020-0140)

Type of Development: Residential (townhomes, stacked, singles, apartments), Office Space, Commercial, Retail, Institutional, Industrial, Other: N/A

Owner/Agent:

Project Manager: Cody Oram

Assigned Planner: Simon Deiacco

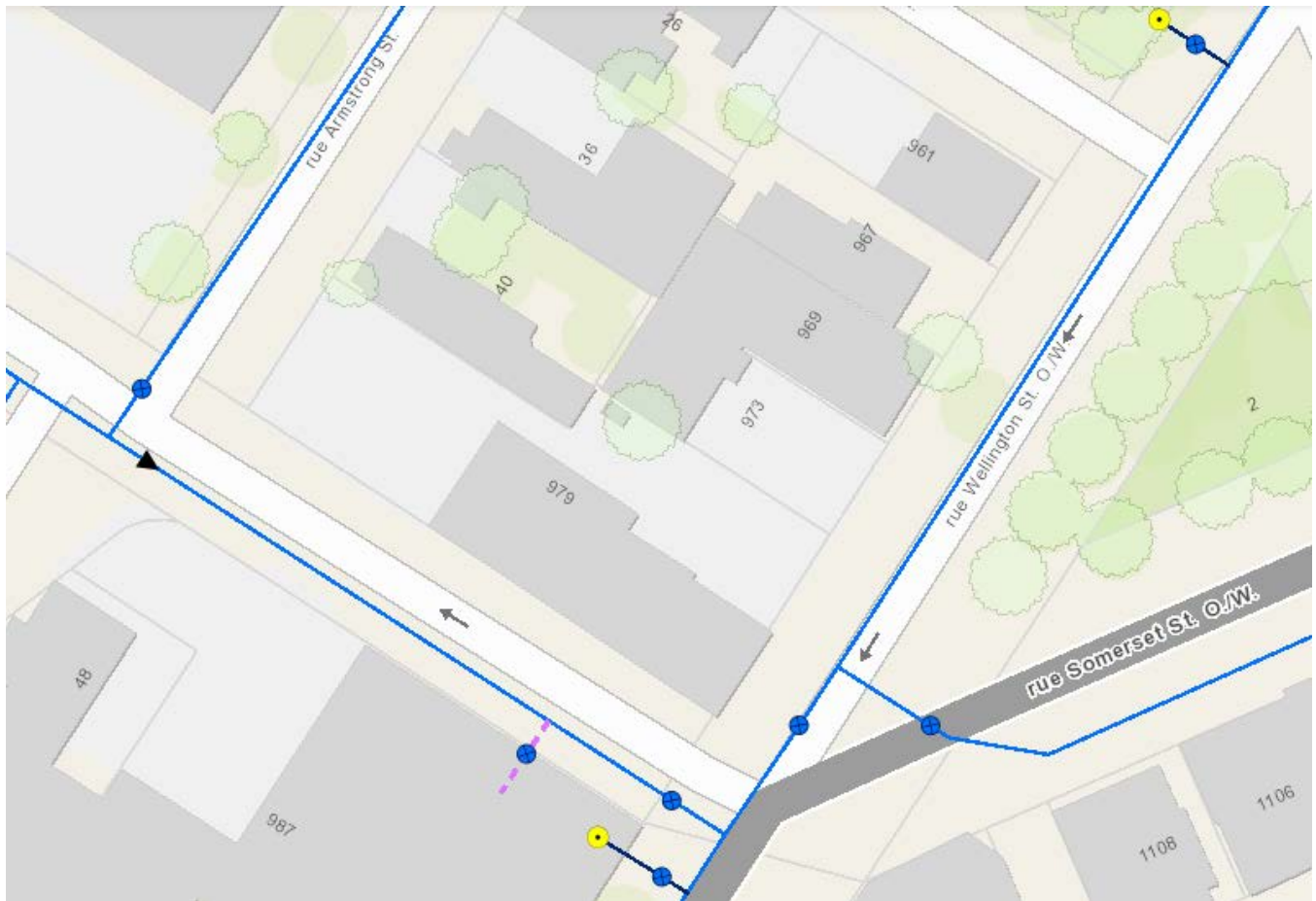
Attendees:

Infrastructure

Water

Existing public services:

- Garland St -152mm DI
- Wellington St – 305mm PVC
- Armstrong St – 203mm PVC



Watermain Frontage Fees to be paid (\$190.00 per metre) Yes No

- If daily demand exceeds 50 m³/day, redundant servicing in the form of two water services separated by an isolation valve will be required.

Boundary conditions:

Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first submission.

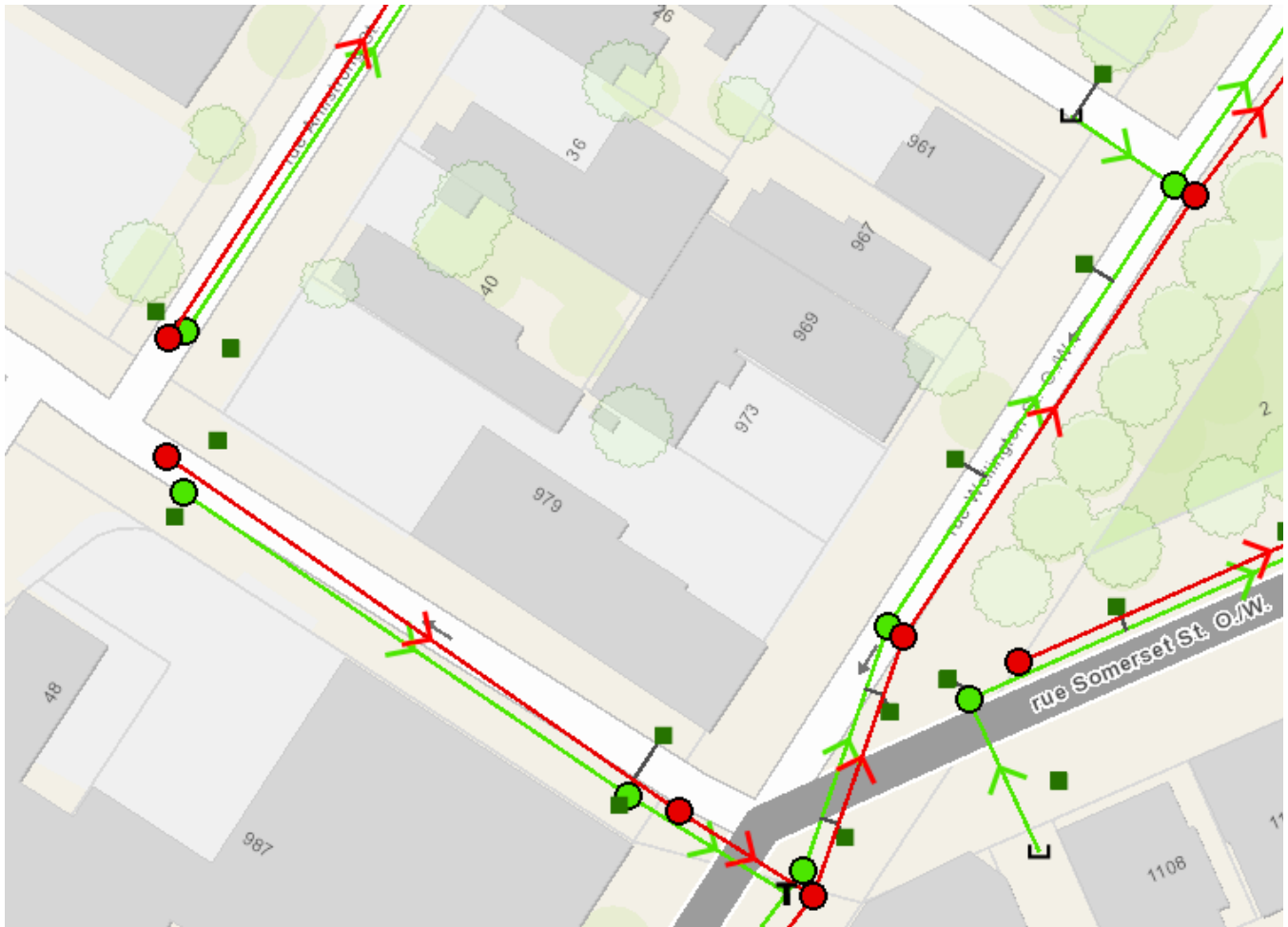
- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:
 - Location of service(s)
 - Type of development and the amount of fire flow required (as per FUS, 1999).

- Average daily demand: ___ l/s.
- Maximum daily demand: ___ l/s.
- Maximum hourly daily demand: ___ l/s.
- Fire protection (Fire demand, Hydrant Locations)
- A water meter sizing questionnaire [water card] will have to be completed prior to receiving a water permit (water card will be provided post approval)

Sanitary and Storm Sewer

Existing public services:

- Garland St
 - Storm – 300 mm Conc.
 - Sanitary – 300 mm Conc.
- Wellington St
 - Storm – 600 mm Conc.
 - Sanitary – 300 mm PVC
- Armstrong St
 - Storm – 300 mm Conc.
 - Sanitary – 300 mm PVC



Is a monitoring manhole required on private property? Yes No

- The sanitary sewer design has assumed a population density for the area. The sewer design should demonstrate that the proposed development is within that design criteria or that additional demand can be accommodated.
- The Environmental Site Assessment (ESA) may provide recommendations where site contamination may be present. The recommendations from the ESA need to be coordinated with the servicing report to ensure compliance with the Sewer Use By-Law.

Stormwater Management

Quantity Control:

- Allowable Run-off Coefficient (C): 0.50 or existing, whichever is less

- Time of concentration (Tc): Tc = 10 min
- Allowable flowrate: Control the 100-year post development storm events to the 5-year storm event calculated using the coefficients above.

Ministry of Environment, Conservation and Parks (MECEP)

All development applications should be considered for an Environmental Compliance Approval, under MECP regulations.

- Consultant determines if an approval for sewage works under Section 53 of OWRA is required. Consultant determines what type of application is required and the City’s project manager confirms. (If the consultant is not clear if an ECA is required, they will work with the City to determine what is required. If unclear or there is a difference of opinion the City Project Manager will coordinate requirements with MECP).
- The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.
- Pre-consultation is not required if applying for standard or additional works (Schedule A of the Agreement) under Transfer Review.
- Pre-consultation with local District office of MECP is recommended for direct submission.
- Consultant completes an MECP request form for a pre-consultation. Sends request to moecottawasewage@ontario.ca
- ECA applications are required to be submitted online through the MECP portal. A business account required to submit ECA application. For more information visit <https://www.ontario.ca/page/environmental-compliance-approval>

NOTE: Site Plan Approval, or Draft Approval, is required before any Ministry of the Environment and Climate Change (MOECC) application is signed

General Service Design Comments

- Connections across another premise, easement, or private roadway are not permitted without a registered easement for the portion of the services.
- The City of Ottawa requests that all new service locations be grouped to minimize necessary road cuts. The stretch of Wellington St along the property frontage was constructed in 2009/2010. The roadway consists of interlock. Reinstatement to existing or better conditions will be a condition of site plan approval should the property connect to public servicing in Wellington St. The proposal will need to demonstrate the reinstatement limits and details.
- Monitoring manholes should be located within the property near the property line in an accessible location to City forces and free from obstruction (i.e. not a parking).
- Where service length is greater than 30 m between the building and the first maintenance hole / connection, a cleanout is required.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The upstream and downstream manhole top of grate and invert elevations are required for all new sewer connections.
- Services crossing the existing watermain or sewers need to clearly provide the obvert/invert elevations to demonstration minimum separation distances. A watermain crossing table may be provided.

Other

Are there are Capital Works Projects scheduled (5 yr) that will impact the application? Yes No

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans are to be submitted on standard size sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey

monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.

- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions). Remember to flatten the digital plans and remove design software layer information, non-flattened plans will be returned to the consultant.
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below:
<https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines>
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca>
(613) 580-2424 ext. 44455
- geoOttawa
<https://maps.ottawa.ca/geoOttawaBeta/>

SITE PLAN APPLICATION – Municipal servicing

For information on preparing required studies and plans refer to:

<http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans>

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S		1. Site Servicing Plan	2. Site Servicing Study	S	
S		3. Grade Control and Drainage Plan	4. Geotechnical Study	S	
		5. Composite Utility Plan	6. Groundwater Impact Study		
		7. Servicing Options Report	8. Wellhead Protection Study		
		9. Community Transportation Study and/or Transportation Impact Study / Brief	10. Erosion and Sediment Control Plan / Brief	S	
S		11. Storm water Management Report	12. Hydro-geological and Terrain Analysis		
		13. Water main Analysis	14. Noise / Vibration Study	S	
		15. Roadway Modification Design Plan	16. Confederation Line Proximity Study		

S/A	Number of copies	ENVIRONMENTAL		S/A	Number of copies
S		17. Phase 1 Environmental Site Assessment	18. Impact Assessment of adjacent Waste Disposal/Former Landfill Site		
		19. Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	20. Assessment of Landform Features		
		21. Record of Site Condition	22. Mineral Resource Impact Assessment		
		23. Tree Conservation Report	24. Environmental Impact Statement / Impact Assessment of Endangered Species		
		25. Mine Hazard Study / Abandoned Pit or Quarry Study			

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, City Planning will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the City.

Notes:

4. Geotechnical Study / Slope Stability Study – required as per Official Plan section 4.8.3. All site plan applications need to demonstrate the soils are suitable for development. A Slope Stability Study may be required with unique circumstances (Schedule K or topography may define slope stability concerns).

10. Erosion and Sediment Control Plan – required with all site plan applications as per Official Plan section 4.7.3.

11. Stormwater Management Report/Brief - required with all site plan applications as per Official Plan section 4.7.6.

14. Noise and Vibration Study – a Noise Study will be required if the noise sensitive development is proposed within 250 metres of an existing or proposed highway or a railway right-of-way, or 100 metres of an arterial or collector roadway or rapid-transit corridor. A Vibration Study will be required if the proposed development is within 75 metres of either an existing or proposed railway ROW. A Noise Study may also be required if the proposed development is adjacent to an existing or proposed stationary noise source.

APPENDIX B

- Watermain Demand Calculations
- Fire Underwriter's Survey Calculations
- Boundary Conditions
- C-001 Site Servicing Plan
- C-010 General Notes and Legends



IBI GROUP
 333 PRESTON STREET
 OTTAWA, ON
 K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : 979 Wellington Street West
 LOCATION : City of Ottawa

FILE: 126031-6.4.4
 DATE PRINTED: 2022-03-01
 DESIGN: 2022-02-22
 PAGE : 1 OF 1

NODE	RESIDENTIAL				NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/min)
	Single	Town	Apt	POP'N	INDTRL (ha.)	COMM. (ha.)	RETAIL (m ²)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	
BUILDING			252	454			790	1.47	0.02	1.49	3.68	0.06	3.74	8.09	0.10	8.19	11,000

ASSUMPTIONS

RESIDENTIAL DENSITIES	AVG. DAILY DEMAND	MAX. HOURLY DEMAND
Apartment (ave) 1.8 p / p / u	Residential: 280 l / cap / day	Residential: 1,540 l / cap / day
	Industrial: 1 / ha / day	Industrial: 1 / ha / day
	Commercial: 1 / ha / day	Commercial: 1 / ha / day
	Retail: 2,500 l / 1000m ² / day	Retail: 11,250 l / 1000m ² / day
	MAX. DAILY DEMAND	FIRE FLOW
	Residential: 700 l / cap / day	From FUS Calculation 11,000 l / min
	Industrial: 1 / ha / day	
	Commercial: 1 / ha / day	
	Retail: 6,250 l / 1000m ² / day	

Fire Flow Requirement from Fire Underwriters Survey - 979 Wellington St West

979 Wellington

Total Floor Area 12,009 m²

$F = 220C\sqrt{A}$

C 0.8 C = 1.5 wood frame
 A 12,009 m² 1.0 ordinary
 0.8 non-combustible
 F 19,287 l/min 0.6 fire-resistive
 use 19,000 l/min

Occupancy Adjustment -25% non-combustible
 -15% limited combustible
 Use -15% 0% combustible
 +15% free burning
 Adjustment -2850 l/min +25% rapid burning
 Fire flow 16,150 l/min

Sprinkler Adjustment -30% system conforming to NFPA 13
 -50% complete automatic system
 Use -50%
 Adjustment -8075 l/min

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall			Exposure Charge *
		Length	Stories	L*H Factor	
north	12.0	35.0	4	140	15%
east	2.0	40.0	18	720	25%
south	31.0	43.0	6	258	10%
west	16.0	53.0	6	318	15%

Total
 Adjustment - l/min

Total adjustments (8,075) l/min
 Fire flow 8,075 l/min
Use 8,000 l/min
133 l/s

Floor	Area (m ²)	Two Largest Floors	Floors Above at 50%
3	1711.6	1711.6	
4	1711.6	1711.6	
5	1414.7		707.35
6	1414.7		707.35
7	1414.7		707.35
8	1407.1		703.55
9	1407.1		703.55
10	1100.1		550.05
11	1083.3		541.65
12	1083.3		541.65
Total	13748.2	3423.2	8585.7

(Note: For fire-resistive buildings, consider two largest adjoining floors plus 50% of each of any floors immediately above them up to eight.)

0% (Note: According to Page G-104 in **Tech bulletin ISTB-2018-02** Revisions to Ottawa Design Guidelines - Water Distribution, "If the exposing wall of the building being considered is taller than the exposed wall of the adjacent structure, no exposure charge applies".)

November 2, 2022

Attention: Lorraine Stevens, MCIP, RPP
Planner III, Development Review Central
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Re: 961, 967, 969, 979 Wellington Street and 26, 36, 40 Armstrong Street (D07-12-21-0228)

On behalf of our client, we are writing this memo to support the city of Ottawa's Site Plan Control request. The new development located at 961, 967, 969, 979 Wellington Street and 26, 36, 40 Armstrong Street is comprised of a 12 storey high-rise mixed use residential buildings. All floor levels including the below grade parking structure will be fully sprinklered. Construction will be that of a typical reinforced concrete high rise using noncombustible materials as per the Ontario Building Code requirements. All structural members including floors, beams and columns will have a minimum of 2 hours fire rating as supported by ULC and UL Standard assemblies. This design will provide the building with a FUS occupancy class of "Limited combustible" and the Type of construction will be "Non-combustible" as defined in the appendix of the Fire Underwriters Survey (1999). Additionally, all vertical openings will be protected in accordance with the Ontario Building Code or other applicable code having jurisdiction; all vertical enclosures will have walls of non-combustible construction with a fire-resistance rating of minimum one hour, all openings will have automatic self-closing devices, and all elevator doors will be of metal or metal-covered construction that will be normally closed for operation of the elevator in keeping with the pertinent code clauses.

We trust this is satisfactory.

Sincerely,



Robert Verch
Senior Project Coordinator

rla / architecture

56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rlaarchitecture.ca

Samantha Labadie

From: Robert Verch <rverch@rlaarchitecture.ca>
Sent: Tuesday, November 8, 2022 10:24 AM
To: Samantha Labadie
Cc: Byron Garner; Jim Moffatt; Doug Cave; Peter Smale
Subject: 979 Wellington - Revised Civil Set

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Reply from Mechanical engineer

“The system being designed is to NFPA 13 and the system will be fully supervised with alarms connected to the fire alarm system. Water supply is standard for both system and hoses”

Rob

From: Samantha Labadie <samantha.labadie@ibigroup.com>
Sent: November-07-22 10:30 AM
To: Robert Verch <rverch@rlaarchitecture.ca>
Cc: Byron Garner <bgarner@rlaarchitecture.ca>; Jim Moffatt <jmoffatt@IBIGroup.com>; Doug Cave <doug.cave@ibigroup.com>; Peter Smale <psmale@mldevco.ca>
Subject: RE: 979 Wellington - Revised Civil Set

Hi Rob,

Thanks for the letter, but we could use a bit more detail on the sprinkler system. Does “fully sprinklered” only refer to a system conforming to NFPA 13, or is it a fully supervised system with alarms and a standard water supply for both the system and fire department hose lines as stated in the FUS?

3. The value obtained in No.2 above may be reduced by up to 50% for complete automatic sprinkler protection depending upon adequacy of the system. The credit for the system is a maximum of 30% for an adequately designed system conforming to NFPA 13 automatic sprinkler standards. Additional credit of up to 10% may be granted if the water supply is standard for both the system and fire department hose lines required. The percentage reduction made for an automatic sprinkler system will depend upon the extent to which the system is judged to reduce the possibility of fires spreading within and beyond the fire compartment. Normally this reduction will not be the maximum allowed without proper system supervision including water flow and control valve alarm service. Additional credit may be given up to 10% for a fully supervised system.

Thanks,

Sam

From: Robert Verch <rverch@rlaarchitecture.ca>
Sent: Wednesday, November 2, 2022 2:29 PM
To: Samantha Labadie <samantha.labadie@ibigroup.com>; Peter Smale <psmale@mldevco.ca>

Cc: Byron Garner <bgarner@rlaarchitecture.ca>; Jim Moffatt <jmoffatt@IBIGroup.com>; Doug Cave <doug.cave@ibigroup.com>

Subject: 979 Wellington - Revised Civil Set

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Sam: FUS letter as per your requested in our last meeting.

Rob

From: Samantha Labadie <samantha.labadie@ibigroup.com>

Sent: September-16-22 1:50 PM

To: Peter Smale <psmale@mldevco.ca>

Cc: Byron Garner <bgarner@rlaarchitecture.ca>; Mark Sarasin <marks@gwal.com>; Robert Verch <rverch@rlaarchitecture.ca>; Jim Moffatt <jmoffatt@IBIGroup.com>; Doug Cave <doug.cave@ibigroup.com>

Subject: 979 Wellington - Revised Civil Set

Good afternoon Peter,

As requested, a revised set of civil drawings are attached in support of permit application. If you need anything else, please let us know.

Thank you,

Sam Labadie P.ENG

Civil Engineer

IBI GROUP

Suite 400, 333 Preston Street
Ottawa ON K1S 5N4 Canada
cell +1 613 899 5717



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Samantha Labadie

From: Wu, John <John.Wu@ottawa.ca>
Sent: Tuesday, November 22, 2022 12:14 PM
To: Samantha Labadie
Cc: Kadri, Nader
Subject: RE: 979 Wellington - Updated Boundary Condition Request
Attachments: 979 Wellington November 2022.pdf

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Here it is:

The following are boundary conditions, HGL, for hydraulic analysis at 979 Wellington Street (zone 1W) assumed to be connected to the 152 mm watermain on Garland Street and the 203 mm on Armstrong Street (see attached PDF for location).

Both Connections:

Minimum HGL: 107.7 m

Maximum HGL: 115.2 m

Max Day + Fire flow (133 L/s): 107.2 m (connection 1) and 108.2 m (connection 2)

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

John

From: Samantha Labadie <samantha.labadie@ibigroup.com>
Sent: November 8, 2022 4:47 PM
To: Wu, John <John.Wu@ottawa.ca>
Subject: FW: 979 Wellington - Updated Boundary Condition Request

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Not sure who to send this through, as Cody is no longer with the city. Are you able to process this request, or let me know who to contact?

Thanks,

Sam

From: Samantha Labadie
Sent: Tuesday, November 8, 2022 4:42 PM
To: cody.oram@ottawa.ca
Subject: 979 Wellington - Updated Boundary Condition Request

Hi Cody,

We are requesting updated boundary conditions for a new development at 979 Wellington (a 12-storey mixed-use building). We are proposing to connect to city watermain at Garland St and at Armstrong St as shown on the attached figure. There are two nearby hydrants on Wellington and one on Armstrong to satisfy fireflow. Water demands and fireflow can be found on the attached and are summarized below,

Average Daily Demand (L/s) – 1.49 l/s
Maximum Daily Demand (L/s) – 3.73 l/s
Peak Hour Demand (L/s) – 8.19 l/s
Fire Flow (L/min) – 8,000 l/min

Let me know if you need anything further.

Thank you,

Sam Labadie P.ENG

Civil Engineer

Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
cell +1 613 899 5717



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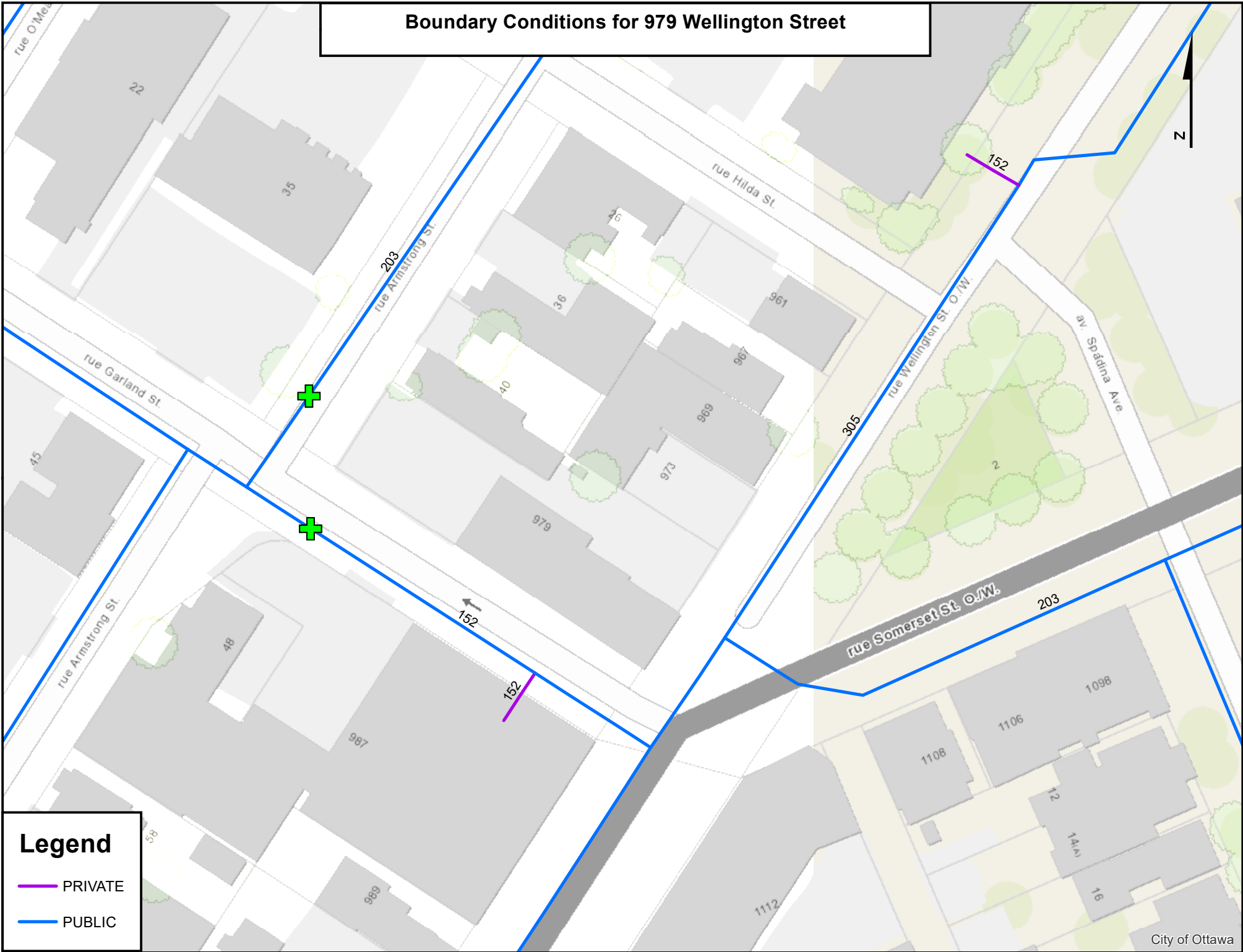
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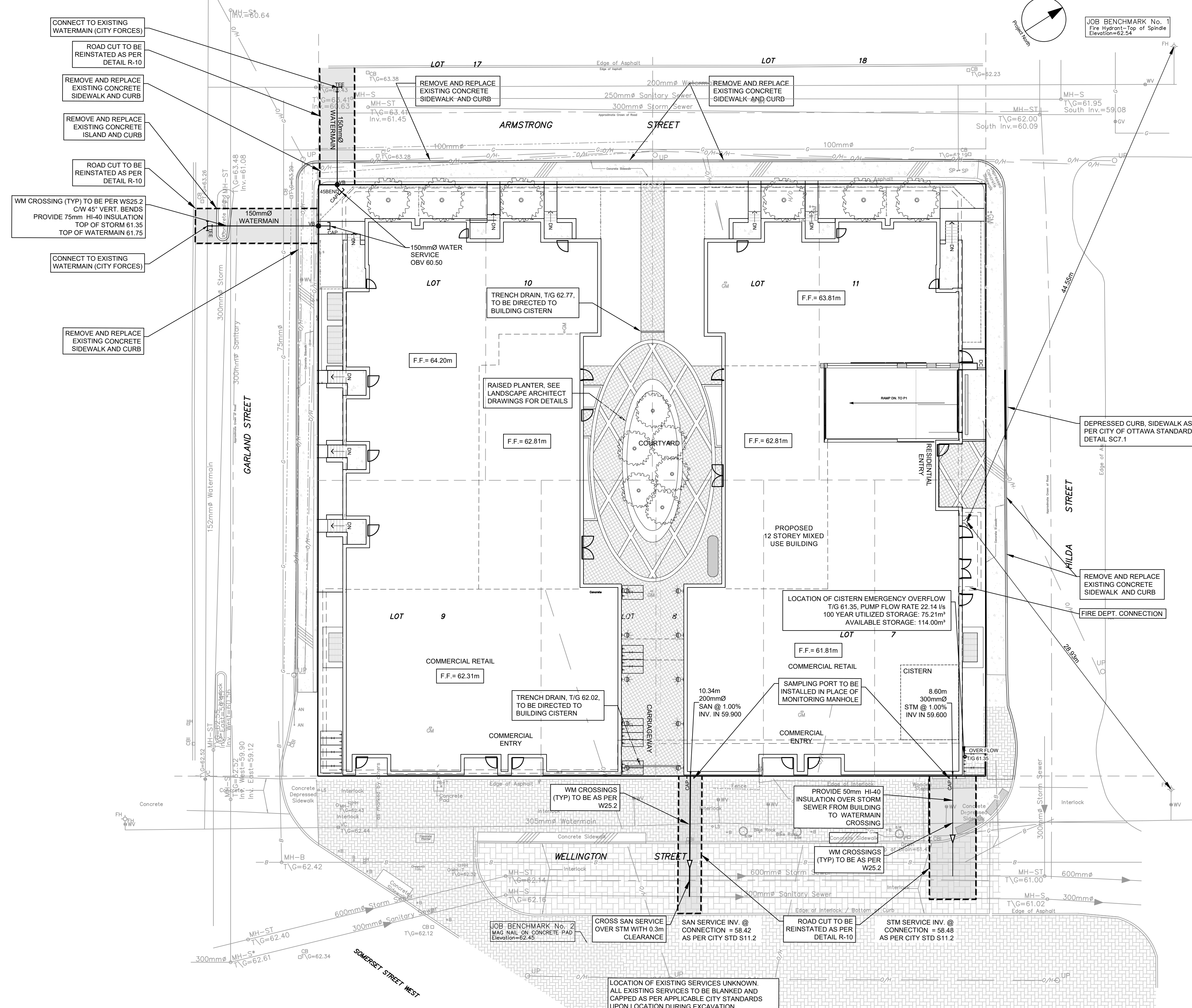
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Boundary Conditions for 979 Wellington Street



Legend

- PRIVATE
- PUBLIC



- CONNECT TO EXISTING WATERMAIN (CITY FORCES)
- ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
- REMOVE AND REPLACE EXISTING CONCRETE SIDEWALK AND CURB
- REMOVE AND REPLACE EXISTING CONCRETE ISLAND AND CURB
- ROAD CUT TO BE REINSTATED AS PER DETAIL R-10
- WM CROSSING (TYP) TO BE PER WS25.2 C/W 45° VERT. BENDS PROVIDE 75mm HI-40 INSULATION TOP OF WATERMAIN 61.75
- CONNECT TO EXISTING WATERMAIN (CITY FORCES)
- REMOVE AND REPLACE EXISTING CONCRETE SIDEWALK AND CURB

JOB BENCHMARK No. 1
Fire Hydrant-Top of Sphere
Elevation=62.24

CLIENT

MAGIL LAURENTIENNE
ML Wellington Realty Investments Inc.
C/O ML DEVCO INC
651, Churchill Avenue N
Ottawa (Ontario) K1Z 5G2
Tel: 613-686-6319

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No.	DESCRIPTION	DATE
1	ISSUED FOR COORDINATION	2022-01-28
2	ISSUED FOR PERMITS	2022-09-16
3	REVISED AS PER CITY COMMENTS	2022-11-28
4	REVISED PER CLIENT COMMENTS	2022-11-29
5	ISSUED FOR TENDER	2023-02-24

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN
N.T.S.

CONSULTANTS

<p>Site Planner FOTENI CONSULTANTS INC. 396 Cooper Street, Suite 300 Ottawa, Ontario, K2P 2H7 T: 613 730 5709 F: 613 730 1195 E: nbsche@fotenicons.com</p>	<p>Geotechnical Engineer PATERSON GROUP 154 Colborne Road South Ottawa, Ontario, K2E 7J5 T: 613 226 7381 E: info@patersongroup.ca</p>
<p>Site Engineer EG GROUP 333 Preston Street, Suite 400 Ottawa, Ontario, K1S 5N4 T: 613 225 1311 F: 613 225 9868 E: profstat@egroup.com</p>	<p>Transportation Engineer CGH TRANSPORTATION INC. 13 Marlborough Avenue Ottawa, Ontario, K2G 3Z1 T: 343 999 8177 E: info@cgtransportation.com</p>
<p>Structural ANNE O'SULLIVAN VOLLEBEK LTD. Ontario Land Surveyors 14 Concourse Gate, Suite 500, Nepean, Ontario, K2E 7S0 T: 613 727 0850 F: 613 727 0779 E: edp@ovktd.com</p>	<p>Architecture RODERICK LAHEY ARCHITECTS 50 Beech Street Ottawa, Ontario, K1S 3J6 T: 613 724 9932 E: edwin@rlaheyarchitecture.ca</p>



SEAL

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Ottawa ON K1S 5N4 Canada
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PROJECT
979, WELLINGTON

PROJECT NO: 126031
DRAWN BY: J.B./D.P.S.
PROJECT MGR: J.I.M.

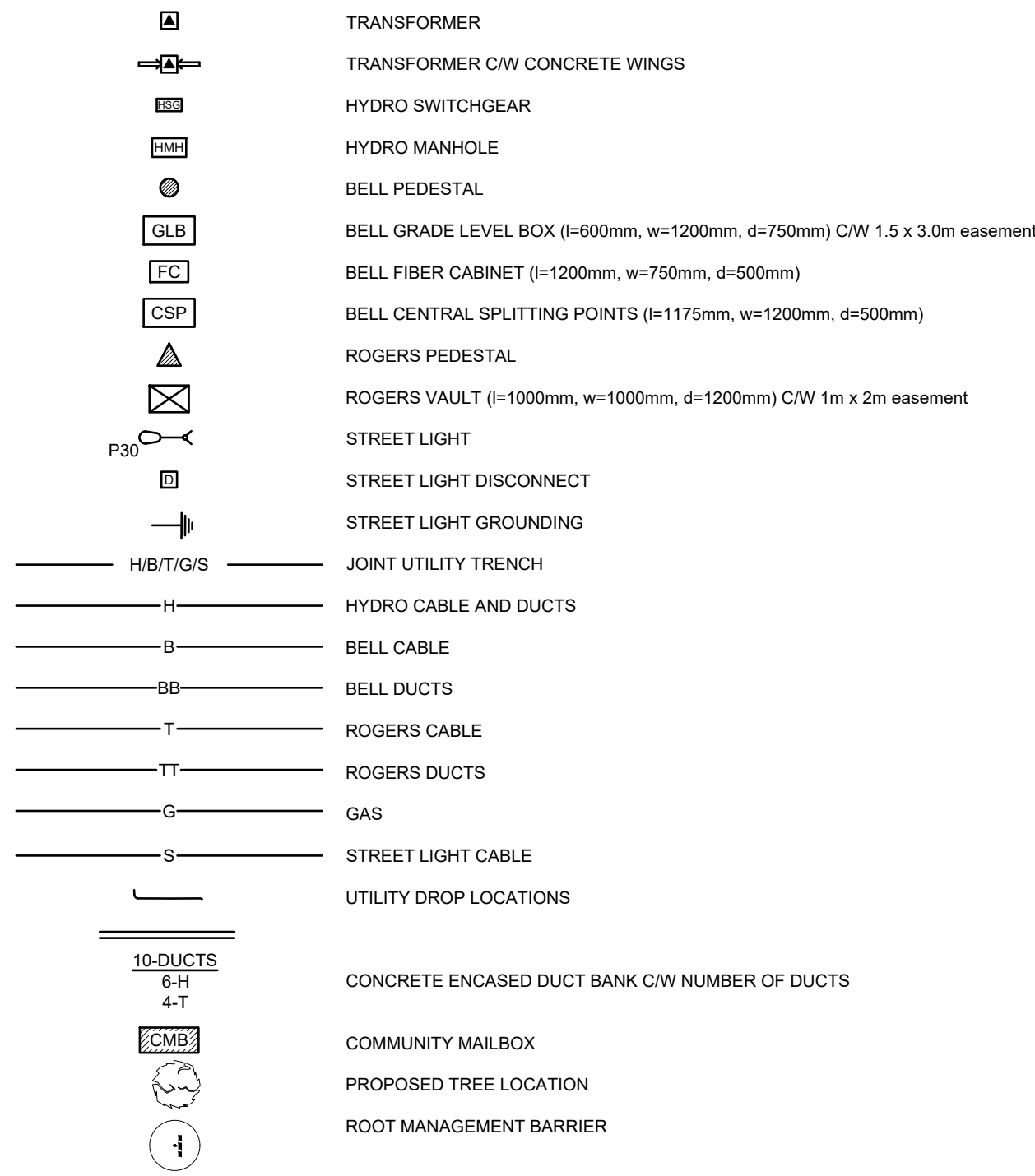
CHECKED BY: J.I.M.
APPROVED BY: J.B.

SHEET TITLE
SITE SERVICING PLAN

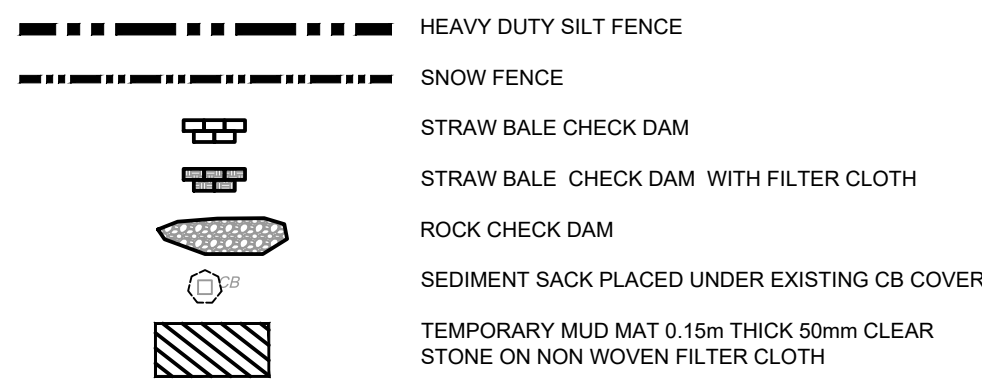
SHEET NUMBER C-001 **ISSUE** 5

CITY FILE No. D07-12-21-0228
SCALE CHECK
File Location: \\128031_979Wellington\0_Production\03_Design\04_Civil\Sheets\C-001-SITE PLAN.dwg
Last Saved: February 23, 2023, by stefan.giesler
Plotted: Thursday, February 23, 2023, 12:55:40 PM by Stefan Giesler

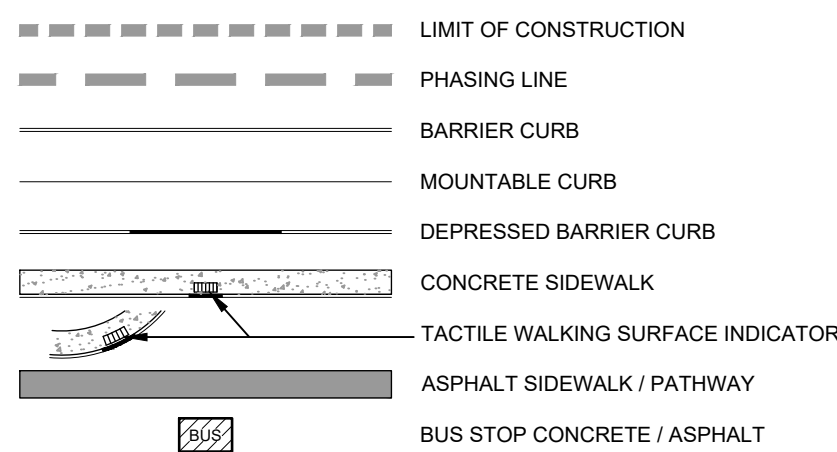
UTILITY LEGEND



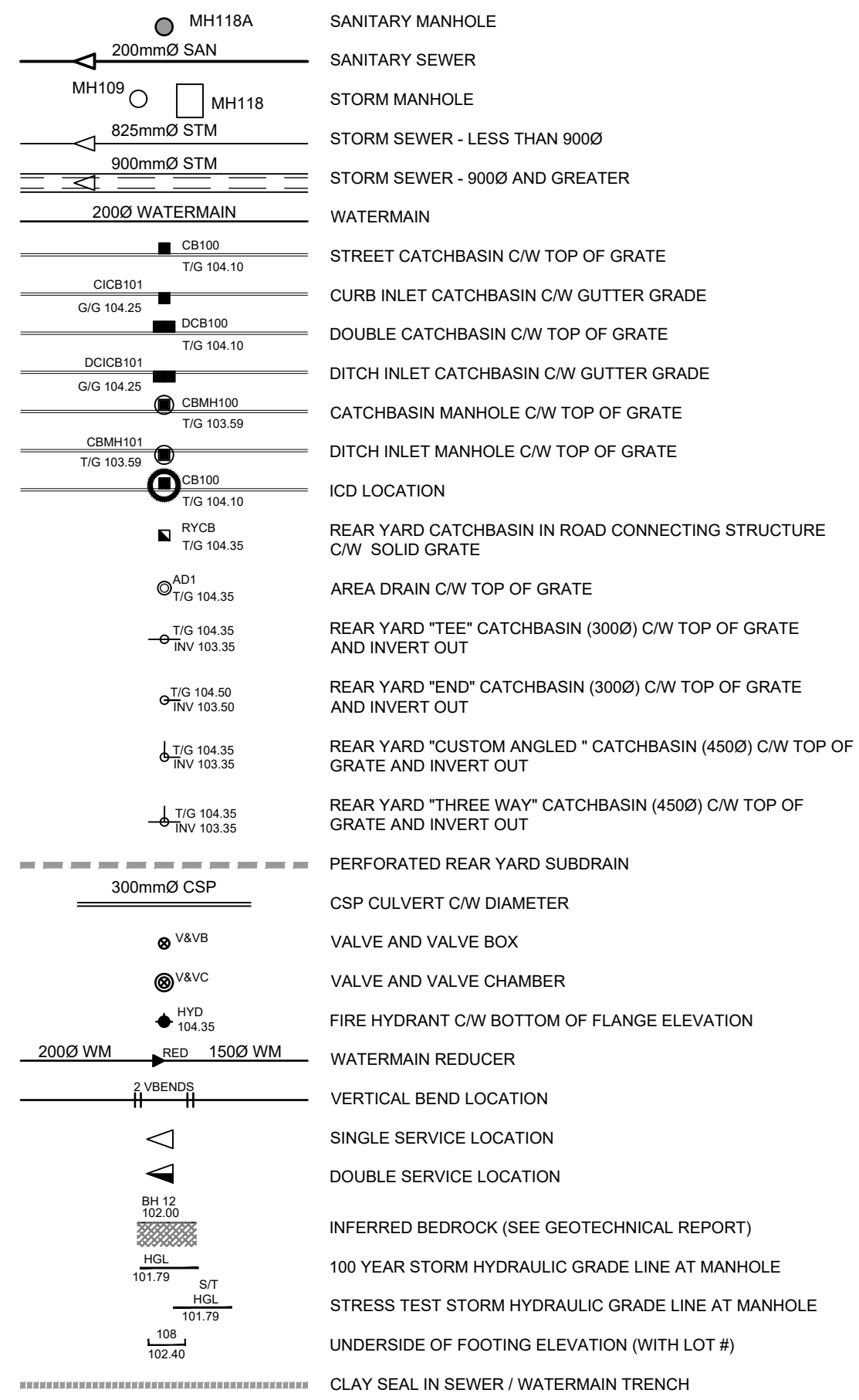
SEDIMENT EROSION LEGEND



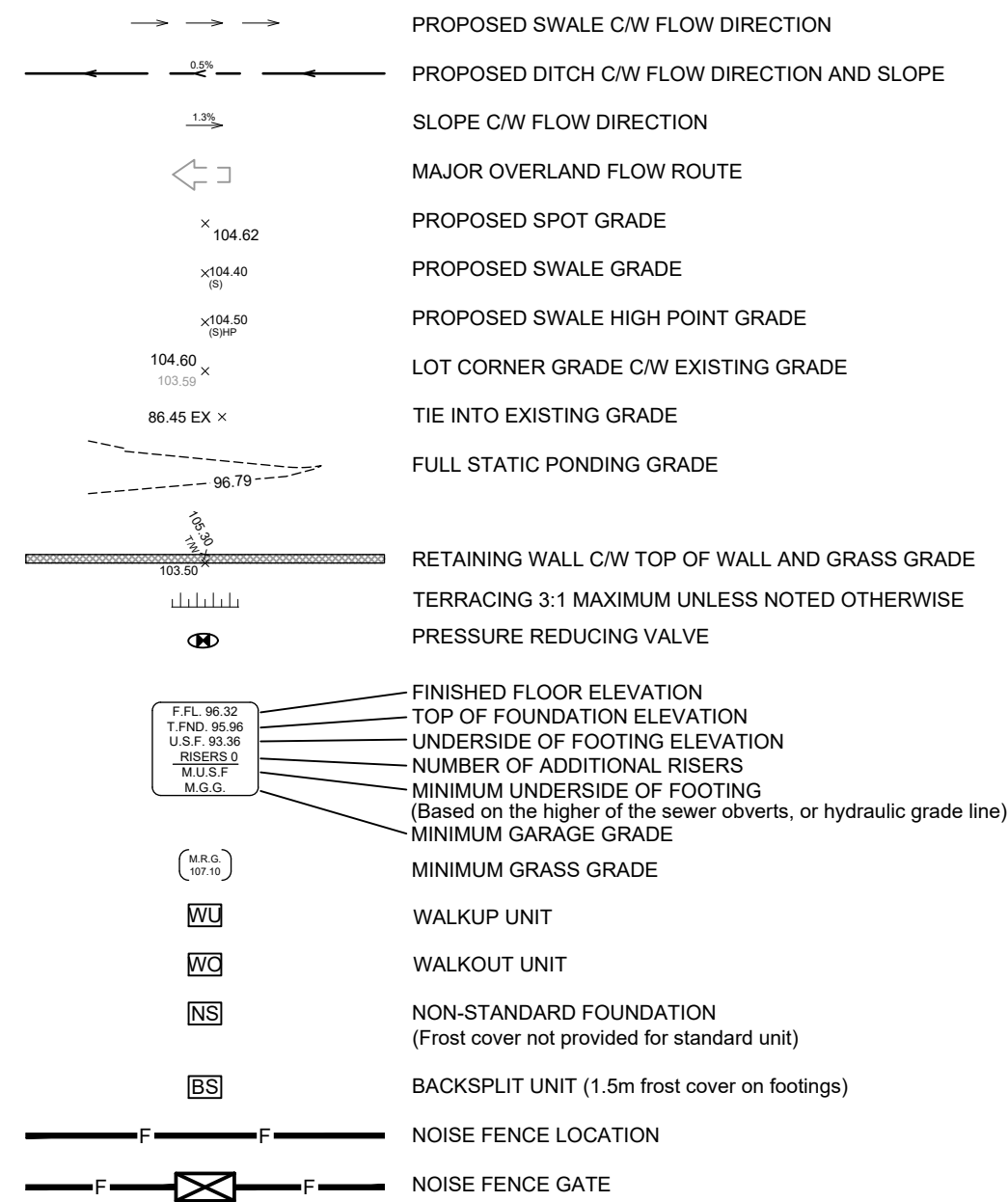
GENERAL LEGEND



SERVICING LEGEND



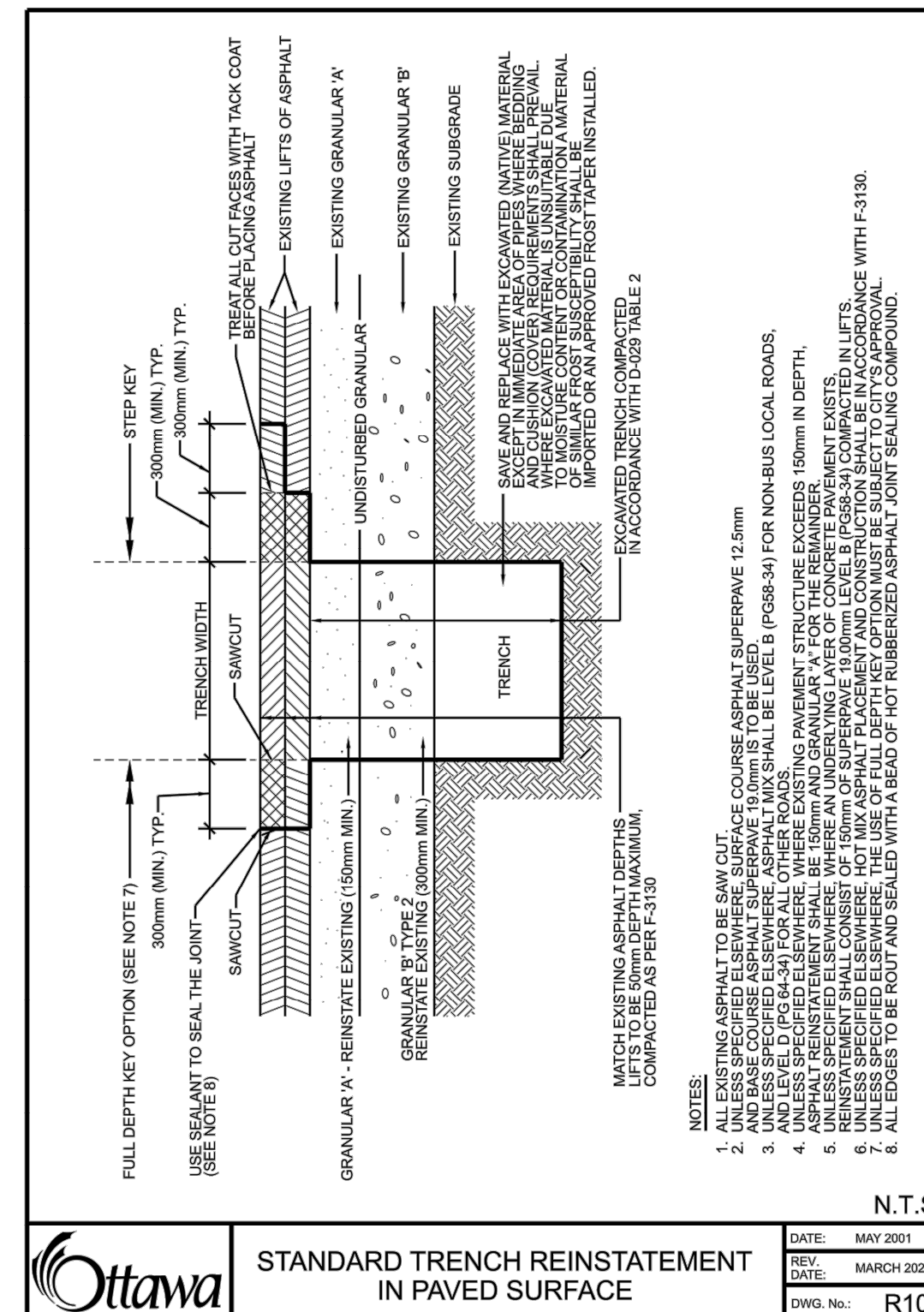
GRADING LEGEND



NOTES :

- ALL MATERIALS AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CURRENT CITY OF OTTAWA STANDARD DRAWINGS & SPECIFICATIONS OR OPSD/OPSS IF CITY DRAWINGS AND SPECIFICATIONS DO NOT APPLY.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION AND SHALL PROTECT AND ASSUME RESPONSIBILITY FOR ALL UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS.
- ROADWAY SECTIONS REQUIRING GRADE RAISE TO PROPOSED SUB GRADE LEVEL TO BE FILLED WITH ACCEPTABLE NATIVE EARTH BORROW OR IMPORTED OPSS SELECTED SUBGRADE MATERIAL IF NATIVE MATERIAL IS DEFICIENT AS PER RECOMMENDATION OF GEOTECHNICAL ENGINEER.
- IN AREAS WHERE EXISTING GROUND IS BELOW THE PROPOSED ELEVATION OF SEWER AND WATERMANS, GRADE RAISING AND FILLING IS TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. AS PER CITY GUIDELINES ALL WATERMANS IN FILL AREAS ARE TO BE TIED WITH RESTRAINING JOINTS AND THRUST BLOCKS.
- CONTRACTORS SHALL BE RESPONSIBLE FOR KEEPING CLEAN ALL ROADS WHICH BECOME COVERED IN DUST, DEBRIS AND/OR MUD AS A RESULT OF ITS CONSTRUCTION OPERATIONS.
- SILT FENCE TO BE ERRECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
- STRAW BALE SEDIMENT TRAPS TO BE PLACED AND MAINTAINED IN EXISTING AND CONSTRUCTED ROADSIDE DITCHES, TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED (IF APPLICABLE).
- SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE FABRIC IN RVCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
- ALL CONNECTIONS TO EXISTING WATERMANS ARE TO BE COMPLETED BY CITY FORCES. CONTRACTOR IS TO EXCAVATE, BACKFILL, COMPACT AND REINSTATE.
- ANY WATERMAIN WITH LESS THAN 2.4M DEPTH OF COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.
- ALL LEADS FOR STREET CBs TO AND ICBs CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 2% SLOPE UNLESS NOTED OTHERWISE. ALL LEADS FOR RVCBs CONNECTED TO MAIN SHALL BE 200mmØ PVC DR35 @ MIN 1% SLOPE UNLESS NOTED OTHERWISE.
- EACH BUILDING SHALL BE EQUIPPED WITH A SANITARY AND STORM SEWER BACKWATER VALVE AS PER CITY STDs S14, S14.1 OR S14.2.
- THESE DRAWINGS ARE NOT TO BE SCALED OR USED FOR LAYOUT PURPOSES.
- THE COMPOSITE UTILITY PLAN HAS BEEN REVIEWED BY IBI GROUP FOR CONFORMITY TO THE DESIGN CONCEPT FOR THE DEVELOPMENT AND FOR GENERAL ARRANGEMENT ONLY AND AS SUCH SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN EITHER LAYOUT OR WORKMANSHIP.
- ALL UTILITY BOXES (I.E. PEDESTALS, TRANSFORMERS, ETC) ARE TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF OTTAWA'S "GUIDELINES FOR UTILITY PEDESTALS WITHIN THE ROAD RIGHT OF WAY".
- THIS DRAWING IS A COMPILED OF OTHER UTILITY DESIGNS AND DOES NOT INDICATE IN ANY WAY THAT THE PARTY SIGNING THIS DRAWING HAS DESIGNED OR APPROVED THE RESPECTIVE UTILITY PLANTS INDICATED ON THIS DRAWING. THE DRAWING WAS PREPARED TO BE USED AS REFERENCE ONLY AS PER REQUIREMENTS OF THE CITY OF OTTAWA. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE IT HAS REVIEWED THE CURRENT AND EXISTING DESIGNS BY HYDRO, STREET LIGHTING, BELL, CANADA POST, O.C. TRANSP. CABLE TV AND ANY OTHER PARTIES INCLUDED BUT NOT MENTIONED AND COMPLETE THE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF THE STAKEHOLDER UTILITY DESIGNS.
- CONTRACTOR TO REVIEW AND FOLLOW ALL RELEVANT CITY STANDARD DRAWINGS DURING CONSTRUCTION.
- OBTAIN ALL NECESSARY PERMITS AND APPROVAL FROM CITY OF OTTAWA BEFORE COMMENCING WORK.
- THERMAL INSULATION TO BE PROVIDED FOR WATER SERVICES LESS THAN 2.4m FROM OPEN STRUCTURES PER CITY OF OTTAWA STD W23.
- WATER SERVICE TO HAVE MORE THAN 2.4M OF COVER OR BE INSULATED PER CITY OF OTTAWA STD W22.
- ALL SANITARY SEWER MAINS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OPSD 1005.01. SANITARY SEWER MATERIALS TO BE: 200mmØ - PVC DR 35.
- ALL STORM SEWER MAINS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OPSD 1005.01. STORM SEWER MATERIALS TO BE: 450mmØ AND SMALLER - PVC DR 35.
- ALL WATERMANS TO BE PVC DR 18, WITH MINIMUM COVER OF 2.4m AND INSTALLED PER CITY OF OTTAWA STANDARDS. ALL DOMESTIC WATER SERVICES ARE TO BE 200mmØ.

CROSSING SCHEDULE	
①	200mmØ WATERMAIN OVER 1200mmØ SANITARY SEWER - CLEARANCE 0.25m (INSULATION REQUIRED)
②	200mmØ WATERMAIN OVER 675mmØ STORM SEWER - CLEARANCE 0.40m
③	200mmØ SANITARY SEWER UNDER 675mmØ STORM SEWER - CLEARANCE 0.25m
④	200mmØ SANITARY SEWER UNDER 300mmØ STORM SEWER - CLEARANCE 0.40m



CLIENT

M.L. Wellington Realty Investments Inc.
C/O ML DEVCO INC.
651, Churchill Avenue N.
Ottawa (Ontario) K1Z 5G2
Tel: 613-686-6319

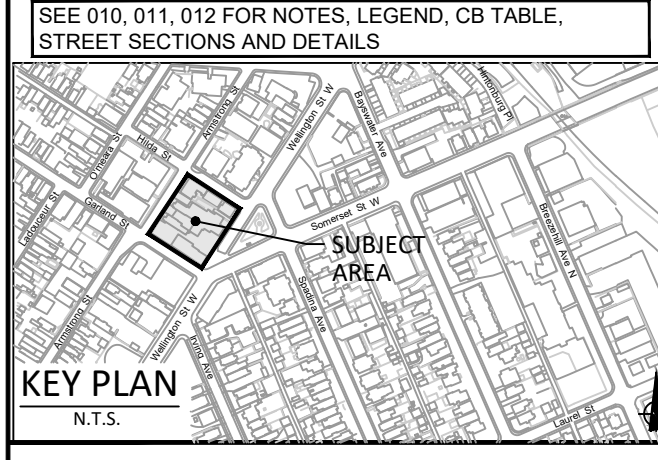
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2	ISSUED FOR PERMITS	2022-09-16
3	REVISED AS PER CITY COMMENTS	2022-11-28
4	ISSUED FOR TENDER	2023-02-24
5		



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SEAL

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PROJECT
979, WELLINGTON

PROJECT NO: 126031	CHECKED BY: S.E.L.
DRAWN BY: D.P.S.	APPROVED BY: J.I.M.
PROJECT MGR: J.I.M.	

SHEET TITLE
GENERAL NOTES, AND LEGEND

SHEET NUMBER
C-010

ISSUE
5

APPENDIX C

- Sanitary Sewer Design Sheet
- C-400 Sanitary Drainage Area Plan



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SANITARY SEWER DESIGN SHEET

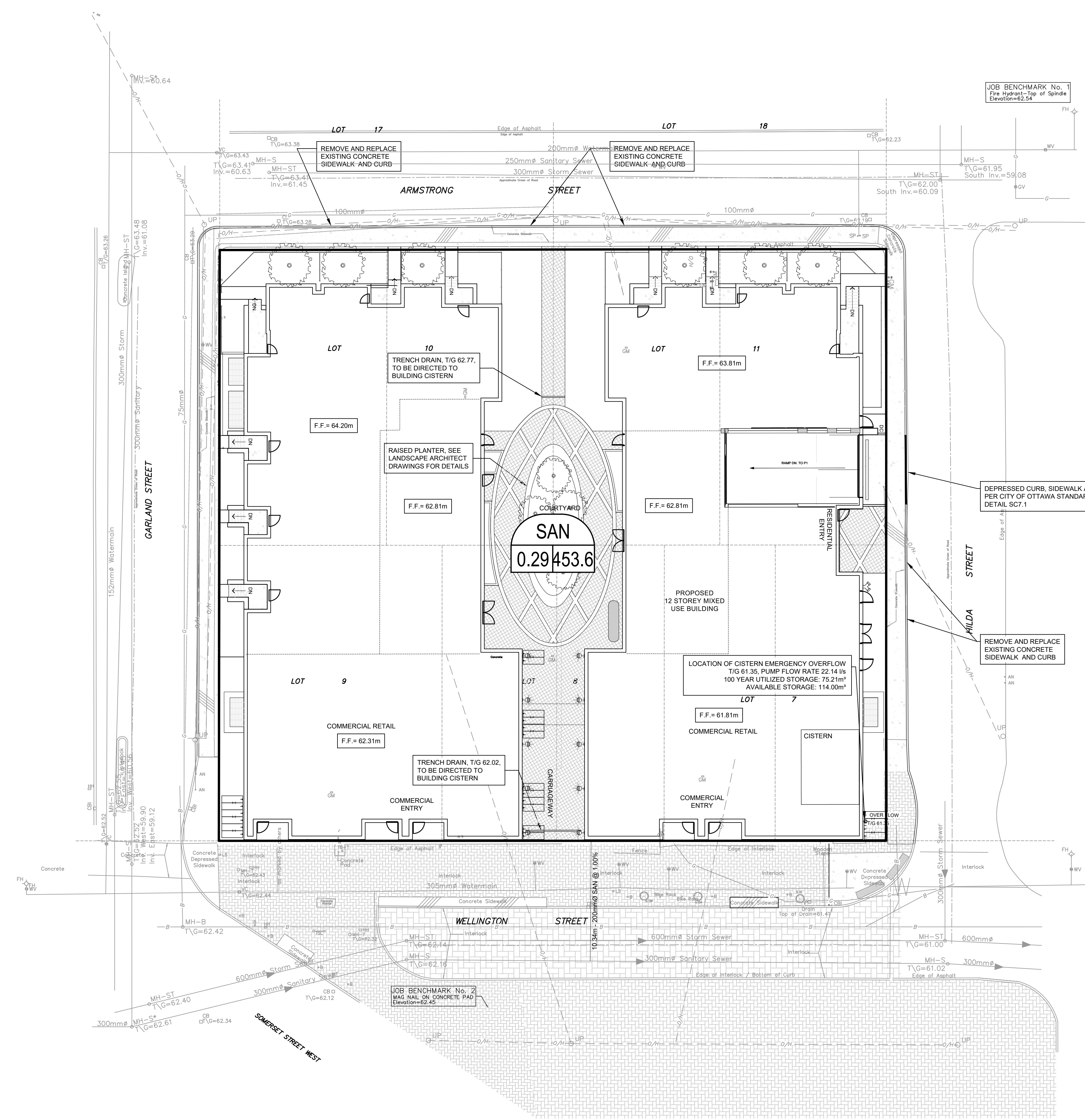
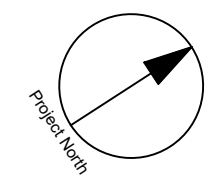
979 Wellington St
City of Ottawa
ML Devco

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
STREET	AREA ID	FROM MH	TO MH	AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)				ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW (L/s)	IND	CUM	TOTAL FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY			
					SF	SD	TH	APT		IND	CUM			IND	CUM	IND	CUM			IND	CUM										IND	CUM	L/s	(%)
979 Wellington St		Building	Main	0.21				252		453.6	453.6	3.40	4.99			0.08	0.08			1.50	0.04	0.29	0.29	0.10			5.13	34.22	10.34	200	1.00	1.055	29.09	85.01%
979 Wellington St																																		
Design Parameters:				Notes:										Designed:				Revision				Date												
Residential				1. Mannings coefficient (n) = 0.013										SEL				No.				2020-11-16												
SF 3.4 p/p/u				2. Demand (per capita): 280 L/day										JIM				1. Issued for Re-Zoning Application				2022-02-22												
TH/SD 2.7 p/p/u				3. Infiltration allowance: 0.33 L/s/Ha										Dwg. Reference: 126031-C-001				2. Submission 2 - Design Brief																
APT 1.8 p/p/u				4. Residential Peaking Factor: Harmon Formula = $1 + (14 / (4 + (P/1000)^{0.5})) \cdot 0.8$ where K = 0.8 Correction Factor																														
Other 60 p/p/Ha				5. Commercial and Institutional Peak Factors based on total area, 1.5 if greater than 20%, otherwise 1.0																														
INST 28,000 L/Ha/day																																		
COM 28,000 L/Ha/day																																		
IND 35,000 L/Ha/day																																		
MOE Chart 17000 L/Ha/day																																		
File Reference: 126031.7.03																												Date: 2022-02-22		Sheet No: 1 of 1				

LEGEND :

A → AREA NUMBER
0.55 0.90 → POPULATION
0.55 0.90 → AREA IN HECTARES

— DRAINAGE AREA LIMITS



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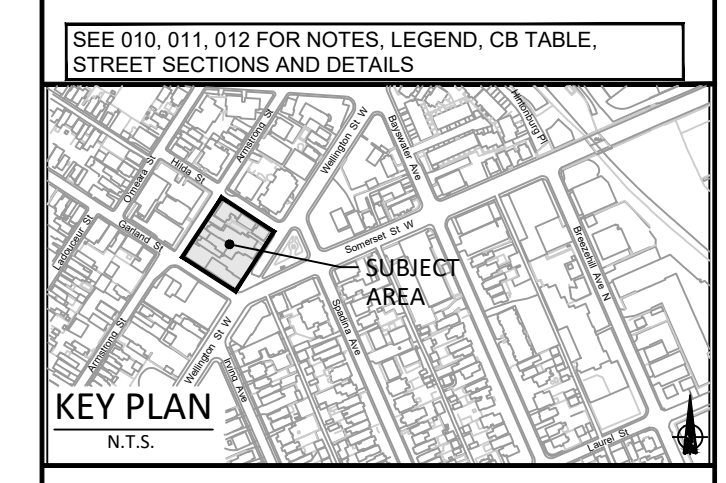
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2	ISSUED FOR PERMITS	2023-09-16
3	REVISED AS PER CITY COMMENTS	2023-11-28
4	ISSUED FOR TENDER	2023-02-24
5		



CONSULTANTS

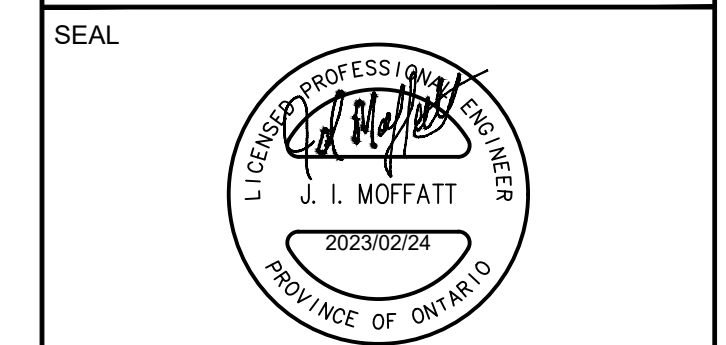
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SCALE

1:200

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PROJECT
 979, WELLINGTON

PROJECT NO:
 126031

DRAWN BY:
 J.B./D.P.S.

CHECKED BY:
 J.B.

PROJECT MGR:
 J.I.M.

APPROVED BY:
 J.I.M.

SHEET TITLE
 SANITARY DRAINAGE AREA PLAN

SHEET NUMBER
 C-400

ISSUE
 5

CITY FILE No. D07-12-21-0228

APPENDIX D

- Storm Sewer Design Sheet
- SWM Calculations
- C-200 Grading Plan
- C-500 Storm Drainage Area Plan



IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT: 979 Wellington St W
DATE: 2022-02-24
FILE: 126031.7.03
REV #: 2
DESIGNED BY: SEL
CHECKED BY: JM

STORMWATER MANAGEMENT

Formulas and Descriptions

$i_{2yr} = 1.2 \text{ year Intensity} = 732.951 / (T_c + 6.199)^{0.810}$
 $i_{5yr} = 1.5 \text{ year Intensity} = 998.071 / (T_c + 6.053)^{0.814}$
 $i_{100yr} = 1:100 \text{ year Intensity} = 1735.688 / (T_c + 6.014)^{0.820}$
 $T_c = \text{Time of Concentration (min)}$
 $C = \text{Average Runoff Coefficient}$
 $A = \text{Area (Ha)}$
 $Q = \text{Flow} = 2.78CiA \text{ (L/s)}$

Maximum Allowable Release Rate

Flow Allocation

$C = 0.5$ (Pre-Development)
 $T_c = 10$ min
 $i_{5yr} = 104.19$ mm/hr
 $A_{TOTAL} = 0.29$ Ha
 $Q_{TOTAL} = 42.00$ L/s

Uncontrolled Release ($Q_{uncontrolled} = 2.78 \cdot C \cdot i_{100yr} \cdot A_{uncontrolled}$)

Hard Surface

$C = 1.00$
 $T_c = 10$ min
 $i_{100yr} = 178.56$ mm/hr
 $A_{uncontrolled} = 0.04$ Ha
 $Q_{uncon} = 19.86$ L/s

Maximum Allowable Release Rate ($Q_{max \text{ allowable}} = Q_{restricted} - Q_{uncontrolled}$)

$Q_{max \text{ allowable}} = 22.14$ L/s

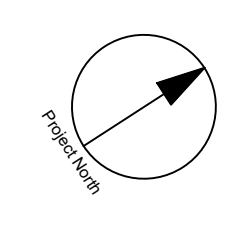
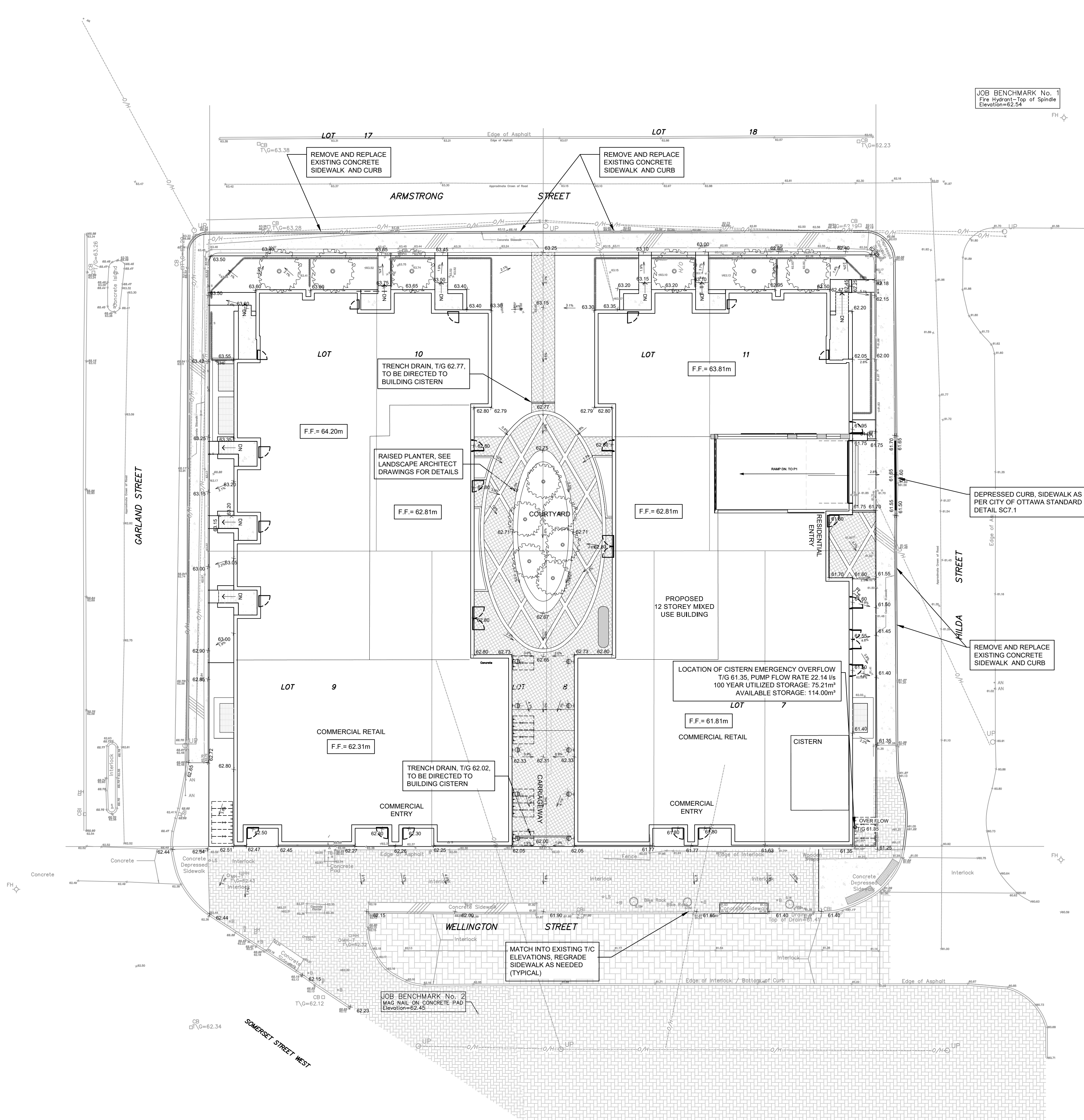
MODIFIED RATIONAL METHOD (100-Year & 5-Year Ponding)

Drainage Area		Cistern				
Area (Ha)	0.250		Restricted Flow Q_r (L/s) = 22.14			
C =	1.00					
100-Year Ponding						
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78 \cdot C \cdot i_{100yr} \cdot A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)	
24	106.68	74.14	22.14	52.00	74.87	
26	101.18	70.32	22.14	48.18	75.15	
27	96.66	68.57	22.14	46.42	75.21	
28	96.27	66.91	22.14	44.77	75.21	
30	91.87	63.85	22.14	41.70	75.07	

Storage (m^3)				
Overflow	Required	Surface	Cistern	Balance
0.00	75.21	0.00	76.00	0.00

Drainage Area		Cistern				
Area (Ha)	0.250		Restricted Flow Q_r (L/s) = 22.14			
C =	0.90					
5-Year Ponding						
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78 \cdot C \cdot i_{5yr} \cdot A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)	
12	94.70	59.23	22.14	37.09	26.70	
14	86.93	54.38	22.14	32.23	27.08	
15	83.56	52.27	22.14	30.12	27.11	
16	80.46	50.33	22.14	28.18	27.06	
18	74.97	46.89	22.14	24.75	26.73	

Storage (m^3)				
Overflow	Required	Surface	Cistern	Balance
0.00	27.11	0.00	76.00	0.00



JOB BENCHMARK No. 1
 Iron Nail on Concrete Pad
 Elevation=62.54

JOB BENCHMARK No. 2
 MAG NAIL ON CONCRETE PAD
 Elevation=62.45

CLIENT

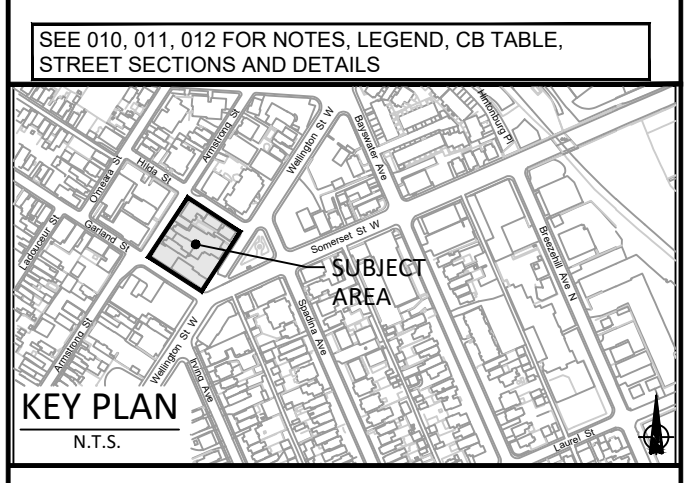
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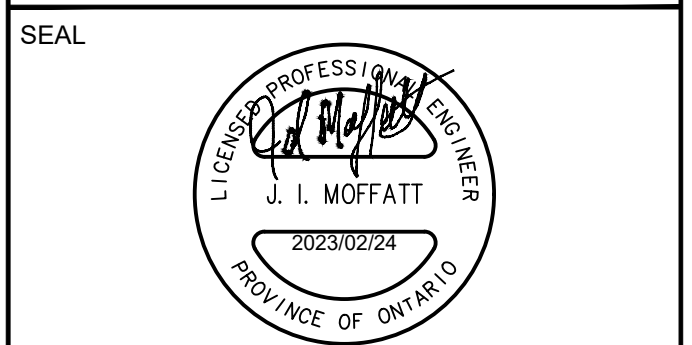
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PROJECT
 979, WELLINGTON

PROJECT NO:
 126031

DRAWN BY:
 J.B./D.P.S.

CHECKED BY:
 J.B.

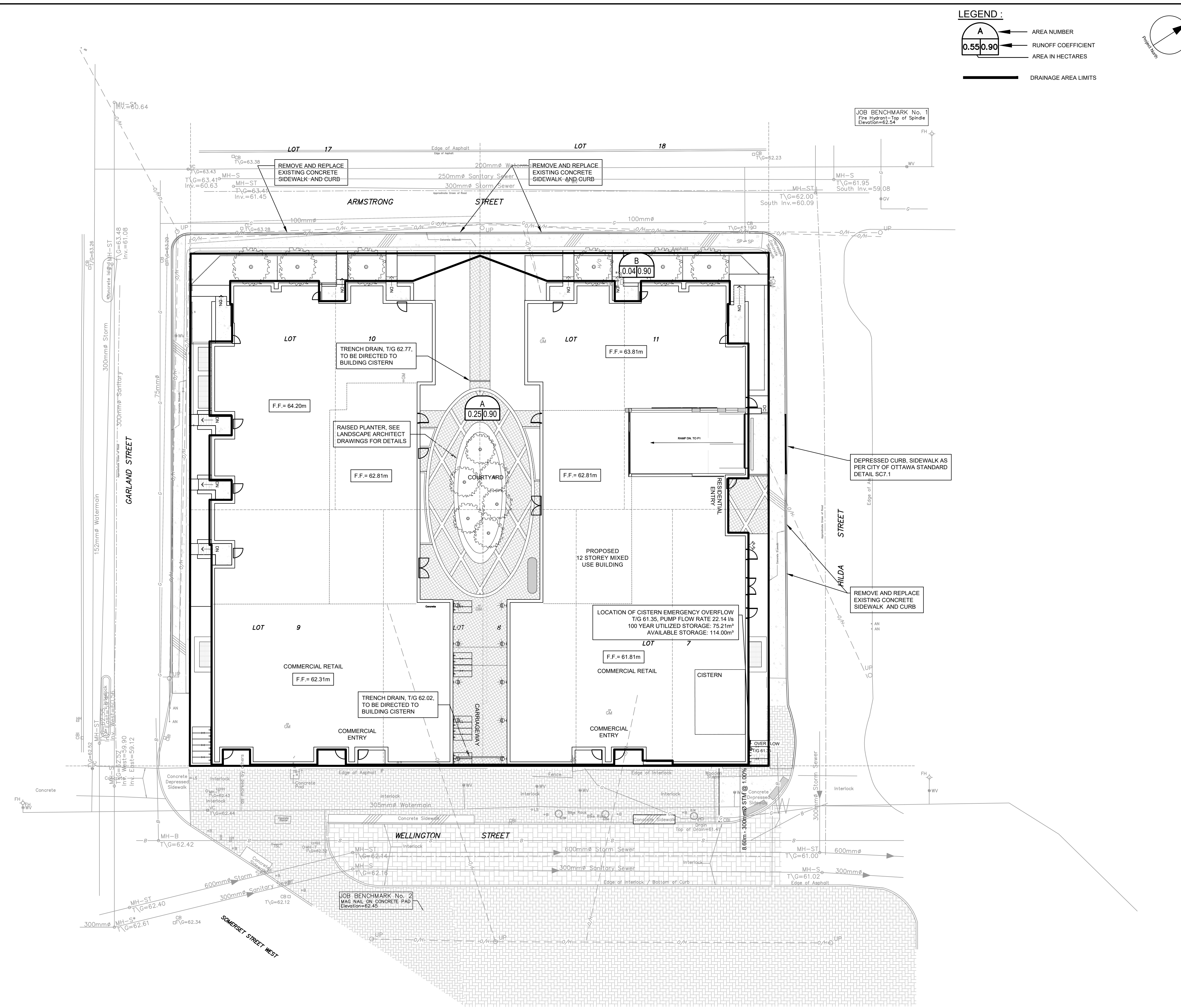
PROJECT MGR:
 J.I.M.

APPROVED BY:
 J.I.M.

SHEET TITLE
 SITE GRADING PLAN

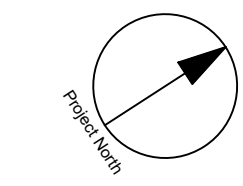
SHEET NUMBER
 C-200

ISSUE
 5



LEGEND :

- AREA NUMBER
- RUNOFF COEFFICIENT
- AREA IN HECTARES
- DRAINAGE AREA LIMITS



CLIENT

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5		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS.

KEY PLAN
 N.T.S.

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 ibigroup.com

PROJECT
 979, WELLINGTON

PROJECT NO:
 126031

DRAWN BY:
 J.B./D.P.S.

CHECKED BY:
 J.B.

PROJECT MGR:
 J.I.M.

APPROVED BY:
 J.I.M.

SHEET TITLE
 STORM DRAINAGE AREA PLAN

SHEET NUMBER
 C-500

ISSUE
 5

CITY FILE No. D07-12-21-0228
 Last Saved: February 27, 2023, by stefan.gaiser
 Printed: Thursday, February 23, 2023 12:46:45 PM by Stefan Gaiser
 File Location: J:\126031_979Wellington\03_Design\04_Civil\Sheets\C-000 STORM DRAINAGE AREA PLAN.dwg

APPENDIX E

- C-900 Sediment and Erosion Control Plan

NOTES:

THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

- SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
- STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
- SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBS TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
- CONTRACTOR TO PROVIDE DETAILS ON LOCATION(S) AND DESIGN OF DEWATERING TRAP(S) PRIOR TO COMMENCING WORK. CONTRACTOR ALSO RESPONSIBLE FOR MAINTAINING TRAP(S) AND ADJUSTING SIZE(S) IF DEEMED REQUIRED BY THE ENGINEER DURING CONSTRUCTION.
- CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
- WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
- THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT

LEGEND :

- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SNOW FENCE
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- ROCK CHECK DAM AS PER OPSD-219.210
- SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

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5		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS.

KEY PLAN
N.T.S.

LEGEND

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Professional Engineer
J. I. MOFFATT
2023/02/24
PROVINCE OF ONTARIO

Scale: 1:200

PROJECT

979, WELLINGTON

PROJECT NO: 126031
DRAWN BY: J.B./D.P.S.
PROJECT MGR: J.I.M.

CHECKED BY: J.B.
APPROVED BY: J.I.M.

SHEET TITLE
EROSION AND SEDIMENTATION CONTROL PLAN

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SHEET NUMBER
C-900

ISSUE
5

CITY PLAN No. xxxxx

ONTARIO PROVINCIAL STANDARD DRAWING Nov 2006 Rev 1

STRAW BALE FLOW CHECK DAM
OPSD 219.180

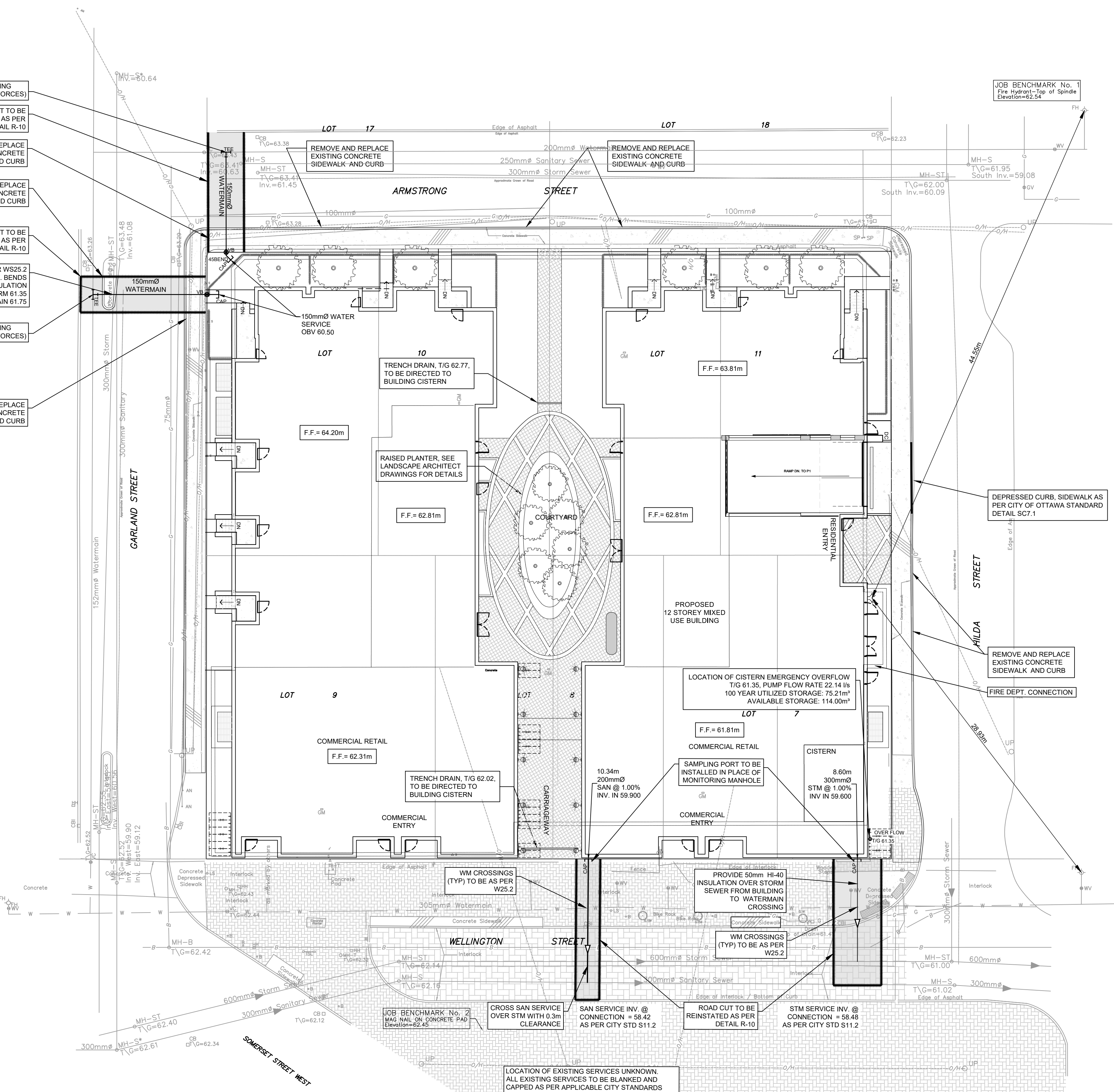
NOTES:

- Number of bales varies to suit ditch.
- Straw bales to be butted tightly against adjoining bales and shaped to conform to the sides of the ditch to prevent water flow through barrier.
- All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING Nov 2006 Rev 1

LIGHT-DUTY SILT FENCE BARRIER
OPSD 219.110

NOTE:
A All dimensions are in millimetres unless otherwise shown.



CITY FILE No. D07-12-01-0228